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Author:	Emmanuel Muller

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General Information on EFFORTI

EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I) seeks to analyse and model the influence of measures to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems. For this purpose, EFFORTI will

- develop an evaluation framework which enables evaluators, science managers, policy-makers and programme owners to conduct a sound analysis of the research and innovation outputs, outcomes and impacts of gender equality measures across Europe, with a focus on the national level;
- design a differentiated concept to analyse a variety of policy measures and assess their performance, taking into account the diversity in the national policies as well as organizational contexts;
- derive general lessons for evidence-based and thus "good" policy-making in the field of gender equality within RTDI systems. This means that not only has progress towards more gender equality in RTDI been achieved, but also that RTDI has been able to benefit from this progress through enhanced scientific and innovation outputs and productivity, as well as through a higher responsiveness to societal needs and challenges.

Terms of use

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Please address questions and comments to: Susanne.Buehrer@isi.fraunhofer.de.

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0 Introduction

This French Country Note is one of seven country notes that were written as part of the H2020 project EFFORTI (Evaluation Framework for Promoting Gender Equality in R&I, No 710470) to analyse the context in which gender equality measures in RTDI take place. EFFORTI seeks to analyse and model the influence of measures to promote gender equality on research and innovation outputs and on establishing more responsible and responsive RTDI (research, technology, development, innovation) systems.

The main objective of this report is to understand the influence of wider contextual framework conditions in France on structuring the situation of women in RTDI, their career opportunities and, subsequently, on the effects of gender equality measures in RTDI. Based on the objectives of the EFFORTI project we have considered following contextual framework conditions as relevant:

- the structure and performance of the research and innovation system,
- gender equality policies in the labour market and welfare policies related to reproductive work and child-care,
- the governance and existing policies of gender equality in RTDI and
- the evaluation culture and policy especially in the field of gender equality in RTDI.

In a concluding chapter the findings of each country note are summarized. This provides a better understanding of how gender equality policies in RTDI are related to the innovation system on the one hand and to broader policies of gender equality and welfare regimes on the other.

With this report we acknowledge the need to analyse the structure and governance of innovation systems and the societal environments in terms of the opportunities and constraints offered by various gender, welfare and innovation regimes for women's employment. This task is particularly important as programs and initiatives to promote gender equality in RTDI are located at the interface of different policy environments of the innovation system and gender equality as well as welfare policies. For each EFFORTI country (Austria, Denmark, France, Germany, Hungary, Spain, Sweden) such a report was compiled because the selected programs and initiatives that will be analysed as case studies, are embedded in different contexts and interact differently with their environment. The national country notes will provide a better understanding of these contexts.

Subsequently, the seven national country notes will be compared with each other in a comparative report. The comparative report will focus on the interfaces between the three domains innovation system, welfare and gender equality policy initiatives as well as of evaluation cultures and how they are reflected in gender equality programs in RTDI. A special emphasis will be put on how gender equality policies are embedded in and aligned with national innovation policies.

Methodology

Most of the research carried out in preparation of the national country notes is desk-based (secondary data collection and analysis of international and national literature). Additional local and sector-level information have been obtained through expert interviews with key informants and through national workshops with stakeholders and evaluators in cases where the information was not available in the collected data or literature.

1 Innovation System

1.1 Structure of the research and innovation system

1.1.1 Ranking in the European Innovation Scoreboard (Rank and Class)

According to the data provided by the EIS data base and analyses, France belongs to the group of "Strong Innovators" (together with Austria, Belgium, Ireland, Luxembourg, Slovenia, and the UK). A country is considered as "Strong Innovator" when displaying an "innovation performance above or close to that of the EU average […] with a performance between 90% and 120% of the EU average" (EIS 2016, p. 6 and next tables).

Table 1: Summary Innovation Index of EIS for 2008 to 2015

	Summary Innovation Index							
	2008	2009	2010	2011	2012	2013	2014	2015
EU	0,495	0,502	0,511	0,514	0,519	0,521	0,523	0,521
France	0,539	0,55	0,56	0,562	0,566	0,56	0,556	0,568

Source: EIS 2016 database1

Table 2: Ranking in the EIS between 2008 and 2015

	EIS Ranking							
	2008	2009	2010	2011	2012	2013	2014	2015
EU	15	15	15	15	15	15	15	15
France	13	13	13	13	13	14	14	14

Source: EIS 2016 database

Innovation systems in "Strong innovators countries" are characterised by high shares of firms involved in innovation activities: innovation seems a natural strategy for firms to meet their customers' demands and to face competitive pressures. This also results in faster employment growth linked to innovation activities. According to EIS figures, French innovation performance increased between 2008 and 2012, declined in 2013-2014, and increased again in 2015. The performance level relative to the EU reached a peak of almost 10% above the average in 2010, and is at 9% above the EU average in 2015.

France's relative strengths are in open, excellent and attractive research systems. The best performing indicator is "non-EU doctorate students". France is experiencing relative weaknesses in dimensions such as "firm investments" and "intellectual assets". Performance is particularly weak when it comes to "non-R&D innovation expenditures", "community trademarks", and "community designs".

To foster innovation, France has – over the last decades – implemented various policies aiming at improving knowledge transfer and science-industry collaborations. However, in spite of numerous measures and incentives, links between science and industry can still be improved. Even if policy measures are regularly adopted to boost the science-industry collaboration framework and develop innovation, tangible results of these efforts are still to be seen.

[1] http://ec.europa.eu/DocsRoom/documents/17823/attachments/1/translations/en/renditions/native

According to the RIO Country Report France (2015, p. 6-7)[2] following main challenges characterise the French R&I system:

1. Increase the impact of R&D incentives on innovation
2. Improve science-industry collaboration
3. Strengthen scientific excellence"

Interviews with two different experts (interviewed separately on the 14/03/2017) highlighted that, concerning the possible weaknesses of the French innovation system:

- Numerous French private actors such as companies are still adopting a "buying on the shelf" strategy. This reflects an "old" philosophy considering the production of new knowledge being mainly the responsibility of public actors (i.e. research organisations and universities) which are already funded by tax money.
- The structure of the French private sector is less conducive to innovative activities comparatively to some other European countries (the perfect example being Germany) since the industry is less based on companies oriented towards high-tech activities and the proportion of "very large SMEs" (the equivalent of the German *Mittelstand*).
- French technology and innovation policies tend to "forget" the human capital investments necessary to enable a high level of interaction ("the software") boosting innovation – supporting networking and prefer to invest in the "hardware". In other words, human resources related measures are often not taken into consideration.

1.1.2 Development of the R&D sector and its subsectors

Concerning the development of GERD (share of gross domestic expenditure on R&D), the RIO Country Report (2015, p. 6) asserts that : "France's GERD has kept on growing in nominal terms since 2006. Within the EU28, France ranks second after Germany. France's GERD stood at €43.5b in 2010, €45.1b in 2011, €46.5b in 2012, €47.5b in 2013 and 48.1b in 2014, which represents 17.0% of total EU28. The GERD to GDP ratio was 2.26% in 2014. France ranks 8th, above the EU28 average (at 2.03% in 2014) (…). This follows the increase of the ratio BERD/GDP from 2007 (1.27%) to 2014 (1.46%, a peak). Total GBAORD has been decreasing since 2009, from €17.5b to below 14.8b in 2014. In terms of percentage of GDP, a steady decrease is apparent over the same period, from 0.93% to 0.7% in 2014. In recent years, the total GBAORD as a percentage of GDP tends to be comparable with the EU average while following a reverse trend." (see also the two next tables).

Table 3: Development of GERD (gross domestic expenditure on R&D) as a percentage of GDP for 2005, 2009 and 2014

	2005	2009	2014
EU-28	1,76	1,94	2,03
France	2,04	2,21	2,26

Source: Eurostat, tsc00031

[2] https://rio.jrc.ec.europa.eu/en/library/rio-country-report-france-2015

Table 4: Development of GERD (gross domestic expenditure on R&D) as a percentage of GDP between 2005 and 2014 by sector of performance

GEO	SECTPERF/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28	All sectors	1,76	1,78	1,78	1,85	1,94	1,93	1,97	2,01	2,03	2,03
	BES	1,1	1,13	1,13	1,17	1,2	1,19	1,25	1,28	1,29	1,3
	GOV	0,24	0,23	0,23	0,24	0,26	0,25	0,25	0,25	0,25	0,25
	HES	0,4	0,4	0,4	0,42	0,46	0,47	0,46	0,47	0,48	0,47
	PNP	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02
France	All sectors	2,04	2,05	2,02	2,06	2,21	2,18	2,19	2,23	2,24	2,26
	BES	1,27	1,29	1,27	1,29	1,36	1,37	1,4	1,44	1,45	1,46
	GOV	0,36	0,34	0,33	0,33	0,36	0,3	0,3	0,29	0,29	0,3
	HES	0,38	0,39	0,39	0,41	0,46	0,47	0,46	0,46	0,47	0,46
	PNP	0,03	0,02	0,02	0,03	0,03	0,03	0,03	0,03	0,03	0,03

Source: EUROSTAT: Total intramural R&D expenditure (GERD) by sectors of performance [rd_e_gerdtot][3]

In terms of the "EU 3 % target" both public and private investments remain 25% below their respective goals. Progress has to be made on both sides. A key objective of the recent research and innovation policy is to better connect them so as to increase synergies and investment. Dynamically enhanced linkages allow cross-fertilisation, whereby companies can benefit from highly differentiating applied knowledge, and public research from sources of funding and key research questioning. A specific focus is placed on improving the support for the exploitation of research outcomes in a business setting (hence the creation in 2012 of the SATT, *Sociétés d'Accélération du Transfert de Technologies*).

The unsatisfactory level of private investment in France is partly due to the sectorial distribution of the French economy, with R&D intensive sectors insufficiently represented in the productive structure.

Higher education institutions (HEIs) are main public research performers. HEIs comprise a group of about 80 universities (2012-2013) and "*Grandes Ecoles*" and several research institutions (such as CNRS[4] or CEA[5] which at the difference of universities has no higher education missions". According to the RIO Country Report 2015 (pp. 12-13) : "In 2014, HEIs (including CNRS) spent roughly €9.9b on R&D, which amounted to slightly below 21% of GERD. On the other hand, government sector's research represented €6.3b, i.e. circa 13% of GERD."

[3] http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

[4] CNRS: Centre National de la Recherche Scientifique

[5] Commissariat à l'Energie Atomique

The observation of the evolution of number of researchers over the past years in the whole R&D sector and its subsectors (see the four next tables) reveals that:

- A stronger overall increase between 2005 and 2013 of researchers took place in France (ca. +30 %) than in the EU 28 (ca. +26%).
- This increases results from the business sector (ca. +51% vs. + 32%)
- At the opposite, the growth in the higher education sector and in governmental institutions was slower (respectively ca. +9% vs. ca. +22% and ca. +12% vs. ca. +16%).

Table 5: Number of researchers in all R&D sectors by years (in full time equivalents)

TIME	EU28	France
2005	1.374.760	202.507
2006	1.422.499	210.591
2007	1.458.115	221.851
2008	1.523.245	227.679
2009	1.555.606	234.366
2010	1.602.765	243.533
2011	1.626.802	249.247
2012	1.680.987	258.913
2013	1.731.241	266.222

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc][6]

Table 6: Number of researchers in the BES by years (in full time equivalents)

TIME	EU28	France
2005	626.081	106.837
2006	654.004	113.521
2007	667.464	124.577
2008	695.179	128.373
2009	695.602	133.701
2010	719.935	143.828
2011	747.215	148.439
2012	792.692	156.392
2013	830.713	161.882

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

[6] http://appsso.eurostat.ec.europa.eu/nui/show.do

Table 7**: Number of researchers in the HES by years (in full time equivalents)**

TIME	EU28	France
2005	551.459	66.290
2006	566.464	67.935
2007	585.624	67.451
2008	618.351	68.897
2009	642.780	68.696
2010	663.331	70.295
2011	656.965	71.170
2012	661.902	71.890
2013	675.973	72.749

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

Table 8: Number of researchers in the GOV by years (in full time equivalents)

TIME	EU28	France
2005	181.758	25.889
2006	185.036	25.641
2007	188.306	26.527
2008	192.370	27.372
2009	199.210	28.702
2010	201.547	26.611
2011	203.821	26.808
2012	207.428	27.413
2013	210.635	28.227

Source: Eurostat, Total R&D personnel by sectors of performance, occupation and sex [rd_p_persocc]

1.2 Knowledge intensity of economies

1.2.1 Knowledge intensity of the labour force

The three following tables show that during the last decade the knowledge intensity of the French labour force did grow only slowly. The proportion of employees in knowledge intensive activities is slightly higher than the one that can be observed on EU28 average. On the opposite, when it comes to the proportion of scientists and engineers in the active population, this proportion grew for EU28 but declined in France after a peak in 2012 so that it become lower than the European average.

Table 9: Proportion of scientists and engineers in the active population between 15 and 74 years, by year

GEO	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	:	:	:	4,9	4,9	5,0	6,4	6,5	6,6	6,6	6,8
France	4,9	5,1	5,3	5,4	5,4	5,5	6,4	6,8	6,4	5,8	5,8

Source: Eurostat, HRST by category, sex and age [hrst_st_ncat]

Table 10: Annual data on employment in knowledge-intensive activities as a percentage of total employment at the national level (from 2008 onwards, NACE Rev. 2)

	2008	2009	2010	2011	2012	2013	2014	2015
EU28	34,2	35,0	35,4	35,6	35,7	35,8	35,9	36,0
France	38,8	39,3	39,0	39,3	39,4	39,0	39,4	39,5

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

Table 11: Employment in knowledge intensive activities – business activities (KIABI)

GEO	2008	2009	2010	2011	2012	2013	2014	2015
EU28	13,2	13,4	13,5	13,7	13,8	13,8	13,9	14,0
France	13,5	13,8	13,8	14,4	14,3	14,0	14,0	14,3

Source: Eurostat, employment in knowledge intensive activities

1.2.2 Number of scientific papers in relation to the population size

In terms of number of scientific papers (in relation to the population size) published each year, in comparison to the other countries under review, France appears as middle-ranked.

Table 12: Number of scientific papers in relation to the population size (in millions inhabitants)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	1092,88	1119,89	1188,24	1256,14	1294,33	1384,84	1474,44	1525,27	1613,33	1654,71
Denmark	1674,35	1740,95	1783,78	1855,24	1936,23	2120,16	2314,30	2521,83	2697,98	2873,62
France	853,81	880,54	888,52	949,98	972,24	982,05	1002,12	1031,02	1069,31	1059,73
Germany	916	938	960	997	1037	1077	1118	1185	1202	1225
Hungary	493,90	508,87	514,03	563,85	545,86	515,50	576,33	617,82	649,65	672,91
Spain	713,58	764,55	807,71	856,09	911,18	959,51	1026,56	1100,10	1146,31	1163,22
Sweden	1880,49	1919,72	1943,90	1953,01	2019,35	2082,29	2143,99	2308,03	2436,99	2484,40

Source: Innovationsindikator 2015

1.2.3 Number of patents developed by publicly financed research in relation to the population size

In terms of number of patents developed by publicly financed research (measured per million inhabitants), in comparison to the other countries under review, France appears as the front runner, together with Denmark. According to J.-A. Héraud (interviewed the 14/03/2017) these figures must be interpreted very cautiously. Over the years, large research institutions such as CNRS and CEA were

"pushed" by the ministry for higher education and research to patent strongly. Nevertheless, the large resulting patents portfolios were not always followed properly in terms of exploitation (i.e. numerous patents were abandoned or the licensing strategy revealed suboptimal). At the same time, these very positive figures say nothing about the tendency of the French firms belonging to the private sector to patent much less than for instance their German counterparts.

Table 13: Number of patents developed by publicly financed research to the population size (in millions inhabitants)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	7,2	10,2	8,9	7,5	11,6	10,5	11,2	11,6	11,7
Denmark	12,7	19,3	23,8	25,7	16,3	17,3	21,2	22,4	26,0
France	15,6	15,8	19,5	24,2	23,7	23,0	25,5	24,8	25,6
Germany	16,2	17,9	18,3	19,2	19,4	19,9	20,1	18,7	17,3
Hungary	0,2	0,8	0,6	1,0	0,7	0,5	0,4	0,4	0,2
Spain	4,8	4,9	6,4	8,5	9,9	10,4	10,2	9,7	7,9
Sweden	0,8	0,4	0,4	0,9	1,3	0,2	0,4	0,7	0,6

Source: Innovationsindikator 2015

1.2.4 Share of tertiary educated population among the group of 25 to 34 years old

Tertiary graduation rates illustrate a country's capacity to provide future workers with advanced and specialised knowledge and skills. Incentives to earn a tertiary degree, including higher salaries and better employment prospects, remain strong across OECD countries. Tertiary education varies in structure and scope among countries, and graduation rates seem to be influenced by the ease of access to and flexibility in programmes and labour market demand for higher skills. In recent decades, access to tertiary education has expanded remarkably, involving new types of institutions that offer more choice and new modes of delivery (OECD, 2014a). In parallel, the student population is becoming increasingly diverse in gender and in study pathways chosen. Students are also becoming more likely to seek a tertiary degree outside their country of origin.

The share of tertiary educated population (among the group of 25 to 34 years old, see next table) is in France notably higher than the EU28 average (ca. 45% vs. ca. 38%). Nevertheless, the increase between 2005 and 2015 is lower than the EU28 average (ca. +12% vs. ca. +33%).

Table 14: Share of tertiary educated population among the group of 25 to 34 years old*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	28,3	29,2	29,9	30,9	32,3	33,3	34,4	35,5	36,5	37,2	37,9
France	39,9	41,5	41,4	40,6	42,9	42,7	42,8	42,6	43,9	44,3	44,7

* Introduction of the ISCED 2011 classification: data up to 2013 are based on ISCED 1997, as from 2014 ISCED 2011 is applied.

Source: Eurostat, Population by educational attainment level, sex and age (%)[edat_lfse_03]

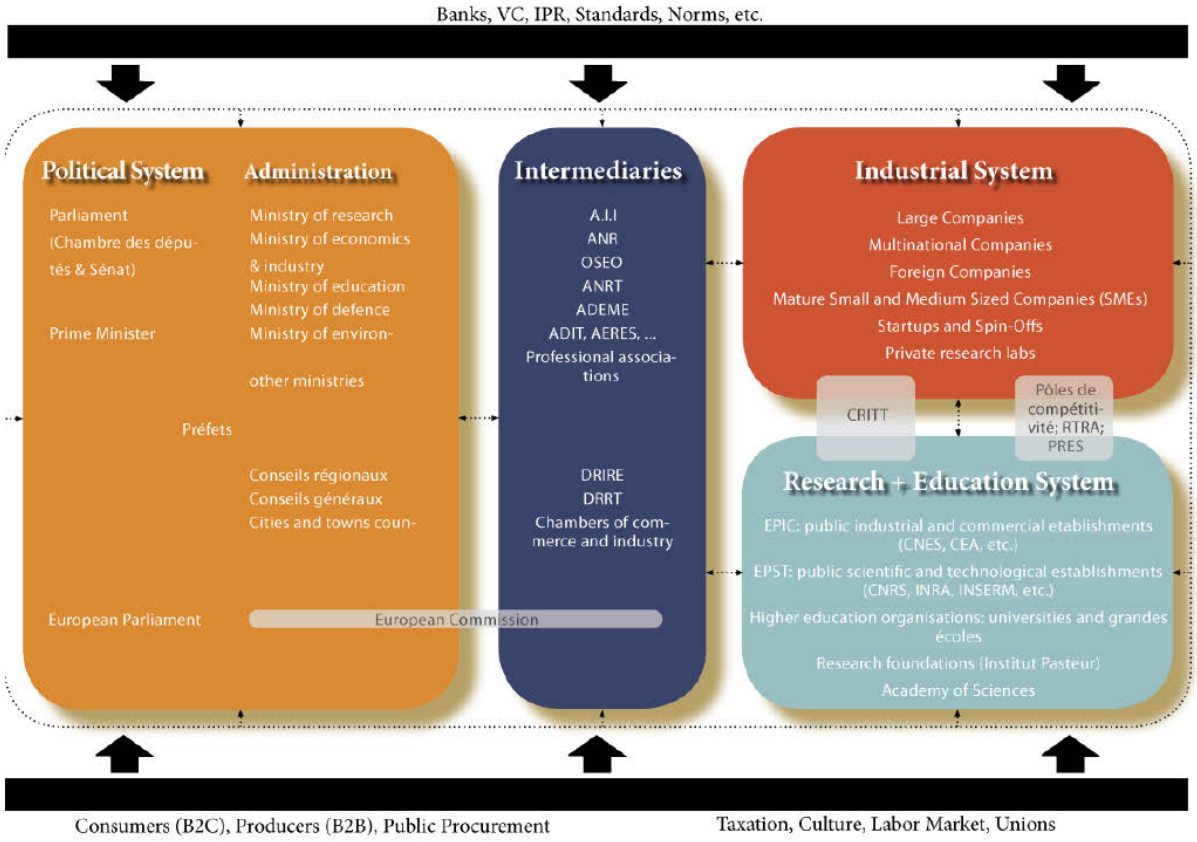
Patterns related to participation of women in tertiary education in France are explored in the section 3.2. In particular, data are provided concerning the gender ratio for all tertiary graduates, by field of education (subsection 3.2.2) and concerning the development of the number and proportion of women ISCED 6 graduates differentiated by field of study (subsection 3.2.3).

1.3 Governance

France is characterised by long tradition of centralised governance even though regional autonomy ("*décentralisation*") has increased progressively in the past three decades. At the same time, in terms of innovation policy, the French situation can be seen as very specific. While up until the 1990s, the French innovation system was characterised by a centralist, interventionist philosophy ("technological Colbertism", Larédo/Mustar, 2001), today, it is undergoing profound transformations, coupled with new actors, regulations and frameworks, as well as new ways of implementing priorities (Héraud/Lachmann, 2015). Since France is at the crossroads between centralization and decentralization, its governance system is now very complicated and variable, involving several levels of regional/local actors and national/European institutions and policy frameworks. Unlike in German federal states, the legal distribution of roles is fixed and as a result, complex multi-level/multi-actor processes in the design and implementation of policies can be observed (Muller et al., 2009).

The following figure details in a schematic way the French innovation system (as it was in 2008). Even if some institutional changes occurred in between (mainly the emergence, suppression, fusion or simple renaming of different agencies) what characterise strongly the French innovation landscape is the multiplicity of intermediaries. The overall efficiency is regularly of the whole system is regularly questioned which leads to continuous changes and adjustments.

Figure 1: Overview of the French innovation system



Source: Fraunhofer ISI, GIGA, STIP (2008, p. 131)

Several academic works address the issue of the French system being characterised by its multi-level governance (see notably Crespy, Héraud, and Perry 2007). According to these authors, the evidence is partial, indicating that the potential for multi-level governance has not been realized in practice. Shifts in science policy governance reflect ongoing processes rather than being fixed in time. During

the last decade, the traditional philosophy of centralized policy design and implementation has changed more in reality than officially advertised. The financial context has encouraged the French state to share certain functions relating to science, research and higher education with local and regional authorities, leading to a more complex governance organization (see also section 1.3.2).

1.3.1 Main actors in research and innovation governance

1.3.1.1 Ministries responsible for R&I

	Main responsibility
France	Ministry for Education, Higher Education and Research (MENESR), Ministry for the Economy, Industry, and Digital Affairs under the direct authority of the Prime Minister: High Commission for Investments (CGI)

At the policy level, two main ministries:

- The Ministry for Education, Higher Education and Research (MENESR), and
- The Ministry for the Economy, Industry, and Digital Affairs

share the responsibility for research and innovation policy in France. In addition, under the direct authority of the Prime Minister, the highly endowed High Commission for Investments (CGI) plays a complementary structuring role.

The Ministry for Education, Higher Education and Research (MENESR) designs and coordinates research policy. It is assisted by a consultative body: the Strategic Research Council (established on 19 December 2013,). According to the Law on Higher Education and Research (July 2013), the implementation of the National Research Strategy shall smooth the system's evolutions for the years to come (notably thanks to a multi-annual programming). This National Research Strategy was developed by the Ministry on the basis of the contributions of French research stakeholders and the Strategic Research Council. The Council is responsible for proposing the broad national strategy for research, and the Parliament for evaluating its implementation. It is chaired by the Prime Minister (or by delegation by the Minister for Research) who guarantees a cross-ministerial coverage.

The Ministry for the Economy, Industry, and Digital Affairs is responsible for industrial research and plays a specific role on the subject of business R&D. Innovation policies are shared by the two ministries.

The fundamental channel for research and innovation funding is the general budget of the Interministerial Mission on Research and Higher Education (MIRES). The MIRES brings together funding from the Ministry for Education, Higher Education and Research (MENESR), the Ministry for the Economy, Industry and Digital Affairs as well as funds from several other ministries (Defence, Culture and Communication, Ecology, Sustainable Development and Energy, and Agriculture, Agrifood and Forestry). The MENESR is the leading ministry within the MIRES and is responsible for implementing the agreed budget plan. It proposes public policy priorities for all research programmes by defining, on an annual basis, the objectives and the means necessary to achieve

them. In addition, the MENESR has responsibility for controlling the eligibility of the expenditures exposed by companies in the framework of the R&D tax credit (CIR). (RIO Country Report France 2015, p. 13-14)

1.3.1.2 Major Funding Agencies (national & regional)

	Major Funding Agencies
France	National Research Agency (ANR)

"At operation level, the French research and innovation system is structured around a number of agencies. The vast majority of public financing of research (and of higher education) originates from a single interministerial budget, the MIRES (Mission interministérielle recherche et enseignement supérieur). It encompasses ten large programmes; half of them are being run by the Ministry for Education, Higher Education and Research, while the budget is implemented through hundreds of "operators", i.e. agencies and RPOs. Concerning research, about 45 operators account for 87% of the credits allocated (see Table below).

Details of some of the most influential agencies are given hereafter.

- **The National Research Agency (ANR)** was created in 2005 to fund research projects on a competitive basis and through public-public and public-private partnerships. According to budgetary sources (Senate, Finance Law 2014), the ANR received a budget of €656m for 2013 (a €80 million reduction as compared with 2012). The ANR covers basic research, applied research, innovation and technology transfer. Originally, it was designed to give a new impulse to the French research and innovation system through: i) the development of new concepts through exploratory research with the so-called "white programmes" (*programmes blancs*) which are non-thematic calls, ii) boosting research on economic and social priorities through thematic calls for projects; iii) promoting collaboration between public and private research through collaborative research, and iv) increasing international partnerships. Since 2010, the ANR is also the operating agency of the High Commission for Investments, in relation to the actions of the Investments for the Future Programme in the field of higher education and research. Since 2014, ANR has stopped funding research according to "white programmes" and has added Defence as a 10th scientific domain. The new policy is to launch mainly "generic calls for projects" (about 69% of the agencies yearly programme). The latter are designed to implement the Ministry's programming; which corresponds to the priorities of the National Research Strategy.
- **The Agency for Environment and Energy Management (ADEME)** was created in 1991 to support and fund environment and energy research on a partnership basis (with a budget of €1b in 2010). ADEME is a dedicated public agency with the responsibility to promote innovation in the field of environment. ADEME's missions consist in promoting, supervising, coordinating, facilitating and carrying out activities aiming at protecting the environment and improving energy savings.
- **Public research organisations (PROs)** such as the National Centre for Scientific Research (CNRS, €3.3b budget in 2014), also contribute to policy implementation.

  In addition to these research agencies, Bpifrance (which replaced OSEO), the public investment bank (as of 31 December 2012), provides support for R&D and innovation projects to businesses, especially SMEs. This national agency has benefited from a €21b endowment in

2013. It is committed to promote and support the industrial development, boost SME growth through innovation and promote technology transfer. A network of regional correspondents and private financing partners complements the public bank organisation." (RIO Country Report France 2015, p. 15-16)

"In terms of competitive funding (close to 12 % of total public budget in 2013, latest figure available, provided by the ANRT), three main sources could be quoted: national agencies, notably the National Research Agency (ANR), the 'Investissements d'avenir' programme (PIA) and the EU Framework Programmes." (ERA Facts & Figures 2014: France, p. 4)

1.3.2 Relevance of national and regional levels in R&I policy and financing

The French R&I system relies on a mix of a powerful central government at national level and regional and devolved institutions. In practice, interactions between the regional authorities and the central government are organised through 6-year contracts called State-Region Plan Contracts (CPER). CPERs set out the financial aid provided by the central government to meet regional policy objectives. One chapter of these contracts is dedicated to research and innovation. The design of the new generation of CPERs has been harmonised with the European Structural Funds programmes (2007-2013; 2014-2020, see. smart specialisation strategies). CPERs focus on competitiveness, on attractiveness of territories as places to do business, on the promotion of sustainable development and on territorial and social cohesion. Hence, research and innovation policies are also defined and implemented at regional level. Even though regions have increased their budgets dedicated to research, technology transfer and innovation by 42% since 2007, regional funding remains limited when compared with national funding1. In 2013, French regions (i.e. regional councils) devoted approximately €918m to research and technology transfer; this was about 68% of the total spending of all local authorities. The overall budget of local authorities (i.e. regions, departments, municipalities) amounted to €1.34b in 2013. Regional and local authorities have their own budgets and they have been granted autonomy to decide the amount they spend on R&D support.

As part of the European cohesion policy for 2007-2013, each French region has developed its own regional innovation strategy (RIS3) with the aim of ensuring a more effective steering of its regional innovation system. The design of RDI policies at sub-national level is the responsibility of regional councils, which may be supported in the implementation stages by regional innovation agencies. Regions are allowed to develop a Regional Research Strategy (SRR) or a Regional Research and Higher Education Strategy (SRESR). (RIO Country Report France 2015, p. 12)

From a general point of view, it can be stated that a shift in policy can be observed over the 10 past years, with (at least partial) bottom-up and competitive procedures being encouraged at the national level. New instruments like "competitiveness clusters" or PRES are designed on the initiative of decentralized actors (universities, territorial communities, and firms) and only subsequently 'labelled' by the central administration. The example of science policy thus also offers insights into the restructuring of the French administration, in terms of forms of public interventionism, new modes of steering and management and the involvement of the regions in the necessary reconstruction of a globally competitive state. Government is creating frameworks that have to be shaped by territorial configurations, leading to more selective action and resource concentration. Within new national frameworks, regions are emerging as intermediate actors within complex governance structures. It is not likely that regional councils can be "the dominant player", but they can mobilize both sub-regional and supra-regional levels to implement their own strategies. Spaces for the negotiation of science policy between national and regional actors have been created and regional science policies

are beginning to emerge in certain regions. Some of these spaces are institutionalized, like the CPER negotiation; others are created ad hoc in relation to particular initiatives. The emerging dynamics of a multi-level science system therefore pose challenges to a traditional centralized French state, with its commitment to balanced growth and regional symmetry. New compromises between concentration and balanced growth have been struck through networking inter-regional groupings and offering equality of opportunity through national competitions. Yet the principle of territorial equality can no longer be seen as a strict rule in national policy: the success of top-down initiatives (and the corresponding distribution of resources) depends inherently on the willingness and the capacities of the territories. Within an increasingly regionally sensitive national framework, it is the capability of actors at the regional level that determines the extent of multi-level governance in different arenas.

2 Gender Equality Policies

2.1 Employment and labour market policies

2.1.1 Description of equal opportunity/ anti-discrimination legislation

France has a long-standing tradition of legislating in favour of gender equality in the domain of employment and professional life. The principle of equality between men and women was first recognized in 1946 in the Preamble to the French Constitution. The law of 11 February 1950 first regulated the principle of equal pay between men and women and states that this principle has to be inserted in collective agreements. In 1972, in order to integrate the ILO Convention into the French system, the principle of equal pay for work of equal value for men and women was introduced into the Labour Code. Since then, at least 12 laws have been adopted dealing with gender equality. Despite this important legislative framework, the implementation of the European Directives on equality has had a very deep influence in pushing the French legislature to address new issues and to adopt new measures, sometimes with some important delay. For example, until May 2008, the main concepts of EU gender discrimination law had not been properly implemented in France, as French legislation included no legal definition of the concepts of direct and indirect discrimination, although the courts have applied the European definitions in some gender case law.

If one looks at the basic structure of the French legal system, it is important to note that the principle of equality between women and men has a constitutional value. In the field of employment and professional life, most of the rules can be found in the Labour Code in the part dealing with discrimination in general (Art. L 1132-1 et seq. of the Labour Code) and in the part specifically dealing with gender equality at work (Art. L 1141-1 et seq. of the Labour Code). The Labour Code only applies to private employment relationships. In the public sector, specific regulations apply, usually with a similar content.

Therefore the two supreme courts in France, the *Cour de cassation* for private law and the *Conseil d'Etat* for public law, apply the rules on gender equality and sometimes with slightly different assessments of cases. It seems, for example, much more difficult for the *Conseil d'Etat* to integrate the concept of indirect discrimination than for the *Cour de cassation*. An important piece of this legislative framework is the Act adopted on 15 May 2008 (Act. No 2008-496) implementing the various directives on discrimination. Among other elements, the Act finally defines direct and indirect discrimination and it applies to public and private relationships. Some provisions of the Criminal Code also deal with penal sanctions for discrimination.

Outside the influence of the European Union, gender equality policies in France could also follow their own agenda. For example, various acts have been adopted with the aim of implementing parity in politics and other decision-making bodies. One of the most important and recent developments in gender equality policy is the adoption of Act No. 2014-873, 4 August 2014, on real equality between men and women. This law promotes an 'integrated and transversal approach to sex equality.' (Gender Equality Country report France 2015, p6)

To summarise:

- According to the Preamble to the Constitution of 27 October 1946, 'The Law guarantees women equal rights to those of men in all spheres.'

- According to Article 1 of the Constitution 'Statutes shall promote equal access by women and men to elective offices and posts as well as to professional and social positions.' This paragraph of the Constitution was first introduced in 1999 and later modified in 2008 to allow positive actions in political elections (gender quotas in political decision making) and also in the professional sphere.
- The Labour Code explicitly prohibits sex discrimination and provides for equal treatment between men and women (Article L1132-1 and Articles L1142-1 et seq.).

Furthermore other discrimination grounds are covered. Article L1132-1 of the Labour Code prohibits discrimination based on origin, sex, morals, sexual orientation and identify, age, family situation or pregnancy, genetic characteristics, membership or non-membership, real or supposed, of an ethnicity, a nation or a race, political opinions, union activities, religious convictions, physical appearance, family name, place of residence, state of health or disability. This list is regularly modified in order to add new prohibited grounds. For example, in 2014 the 'place of residence' was added to the list. (Country report on Gender Equality: France 2015, p. 6).

Wage transparency: One of the most important measures obliging employers to address the issue of equal pay is the information they have to give to workers' representatives (works councils and trade union representatives) on equality. Businesses employing 50 or more staff have to produce a written annual report for the works council comparing the situation of men and women in the company. This must comprise a comparative analysis in terms of recruitment, training, qualifications, pay, working conditions and a balance between professional and private life, supported with relevant statistically-based indicators (Article L2323-47 of the Labour Code for companies employing between 50 and 300 employees, Article L2323-57 for companies employing more than 300 employees).

The employer has to record measures taken in the company over the previous year to attain employment equality, and an outline of the objectives for the year ahead. The publication of relevant indicators into the workplace is mandatory according to the law, so as to enable the report to be analyzed in detail. Employees have the right to consult the report directly (Article L2323-58 of the Labour Code).

Employers also have to provide information on equality in annual negotiations. They have to give month-by-month data on trends regarding the number of staff and their qualifications according to sex, and to state the number of employees on permanent contracts, the number of fixed-term contracts and the number of part-time employees (Article L2242-5 of the Labour Code).

At the first meeting in compliance with the annual obligation for unions and employers to negotiate at enterprise level, the employer has to provide trade union representatives with information that enables them to carry out a comparative analysis of the situation of men and women in jobs, qualifications, pay, the hours worked and the organisation of working time. The accompanying information has to explain the situation reflected in the statistics. Companies with fewer than 300 employees can conclude an agreement with the State to receive financial assistance to carry out a study of their employment equality situation and of the measures they would need to take to ensure equal opportunities between men and women (Article R 1143-1 of the Labour Code). (EC 2015, Country Report Gender Equality: France, p15f)

Gender balance in company boards: The Bill aiming at improving gender balance on company boards was adopted on 27 January 2011 (Act No 2011-103). The bill intends to improve the representation of women on company boards and it imposes a quota. Firms which have more than 500 employees

and revenue of over EUR 50 million have to ensure that each sex has at least 20 % of boardroom seats by 2014, and 40 % by 2017.

Gender balance in politics etc.: France has adopted various provisions in order to improve gender balance in political elections and also in various other fields. Regarding political candidate lists, the rules depend on the type of elections. For example, for the departmental elections, for the first time this year the law states that there must be two candidates for each departmental district, a man and a woman. Since 2000, the law states that all political parties should include equal numbers of men and women on party lists for those elections conducted via proportional representation (European Parliament, municipal and regional elections). For elections to the National Assembly, political parties shall also present the same number of candidates for each sex and non-compliance with that rule will result in a financial penalty. The problem here is that it does not impede political parties from providing women with unwinnable seats.

In 2012, a new law was also introduced imposing a 40 % gender quota to be reached by 2018 for nominations to executive functions in the public service. This quota applies to administrative and supervisory boards of public institutions, high councils, juries and selection committees in public service procedures. The 2014 Act for real equality has extended quotas to civil society organizations such as sport federations. Finally, Act No. 2015-994, of 17 August 2015 on social dialogue and employment also contains some provisions regarding parity in the elections of workers' representatives. The lists of candidates being proposed for these representative positions should reflect the gender balance of the employees represented. Thus the list should represent the same proportion of men and women as the proportion of the electoral college. (EC 2015, Country Report Gender Equality: France, p12f)[7]

2.1.2 Description of Structures for Gender Equality

At national level, the Service for Women's Rights and Equality between Women and Men (SDFE) is the government body in charge of gender equality and gender mainstreaming, placed under the responsibility of the General Directorate for Social Cohesion, within the Ministry of Social Affairs, Health and Women's Rights. Created in 2010 as part of the general reform of public policies, the directorate promotes women's rights and gender equality at national, regional and departmental level. The SDFE coordinates 26 regional and 100 district Delegations for Women's Rights and Gender Equality, thus providing France with a dense institutional network to implement a mainstreaming strategy.

In 2012, an Interministerial Committee for Women's Rights and Gender Equality was established: it comprises all ministers and aims to adopt measures relevant to the promotion of women's rights in all policy areas. It is required to adopt a transversal action plan to tackle gender inequalities in every policy field. Since 2012, respective ministers report to the Interministerial Committee for Women's Rights and Gender Equality concerning the implementation of the interministerial action plan, which is a set of measures tackling gender inequalities in different areas. This set of measures provides a general framework to be detailed and supported by monitoring and evaluation measures in the form of gender-equality action plans at the ministry level.

Since 2012, each ministry has appointed hauts fonctionnaires à l'égalité (high-ranked public officials for gender equality), coordinated by the Ministry of Social Affairs, Health and Women's Rights. Their

[7] http://ec.europa.eu/justice/gender-equality/document/index_en.htm#reports2014

mandate is to implement a mainstreaming approach and design gender-equality plans for their respective policy areas. They are members of the High Gender Equality Council, a consultative gender-equality body instituted in January 2013 and placed under the responsibility of the Ministry of Women's Rights. The council brings together several bodies that had previously worked separately, but are now endowed with new competencies in relation to gender impact assessments and the evaluation of gender-equality policies.

At regional level, delegates for women's rights and gender equality (Délégations régionales aux droits des femmes et à l'égalité, DRDFEs) were established in each of the 26 regions to implement national gender-equality policies. Regional delegates, usually supplied with a small staff, are either attached to the General Secretary for Regional Action, which is directly related to the regional prefect (préfet de région), or to the Regional Directorate for Social Inclusion, Youth and Sports. In charge of implementing state gender-equality policies at the regional level, DRDFEs also coordinate regional and local actors such as the centres d'informations des droits des femmes et des familles (women and families information centres), which were created in 1972. However, as indicated in several evaluation reports, there is a lack of coordination between the departmental delegates (that were previously under the responsibility of the Regional Delegation for Women's Rights and Gender Equality). This explains the limited activity of many departmental delegates as well as their high rates of absenteeism.

Although the coordinating capacity of the central gender-equality apparatus has been questioned vis-à-vis decentralised structures, recently efforts have been made to improve the accountability of regional services towards the central administration. Since 2012, the Ministry of Women's Rights has been playing an important coordinating role. Nonetheless, incentives provided by the ministry are currently concentrated in the most advanced regions (i.e. Brittany, Rhône-Alpes and Île-de-France), due to regional delegates' uneven activity and capacity (in terms of expertise and local political support).[8]

[8] http://eige.europa.eu/gender-mainstreaming/countries/france/structures

2.1.3 Description of relevant policy initiatives to foster equality

Table 15: Relevant policy initiatives to foster equality between women and men[9]

Equal economic independence	• Labour market participation • Work-life-balance • Childcare facilities	X
Equal pay for equal work and work of equal value	• Wage transparency • Awareness raising for consequences of part-time-work and fixed term contracts • Equal pay • Vocational orientation for non-traditional occupations	x
Equality in decision-making	• initiatives to improve the gender balance in decision making • Monitoring the 25% target for women in top level decision-making positions in research • 40% of members of one sex in committees and expert groups • Support greater participation by women in European Parliament elections including as candidates	x
Horizontal issues	• Promoting non-discriminatory gender roles in all areas of life such as education, career choices, employment and sport • Equality bodies who monitor, enforce, evaluate and update the legal framework • Annual Report on progress on gender equality	x
Additional activities	• Gender budgeting in legislation	X

Increased attention has been paid to cross-sectorial and/or interministerial work in policy documents, providing institutions with more detailed guidelines for the design of gender-equality action plans, both at national and regional level. This is the case of the 'Gender' Strategic Orientation Document (2007), the most comprehensive strategic document ever produced by public authorities to support gender mainstreaming, although its application is limited to international development policies. Not only does it provide an updated definition of gender mainstreaming and related concepts (including gender budgeting), it also offers a detailed framing of this approach and its implementation in the field of development policies. More recently, the national framework for tackling gender inequalities in every policy field has been provided by the interministerial action plan, which was adopted by the Interministerial Committee on Women's Rights and Gender Equality in November 2012. Since the same year, following the re-establishment of a Women's Rights Ministry, the adoption of a gender-equality action plan by each ministry has become compulsory. A specific reference to gender mainstreaming is contained in the first article of the 2014 Act on Equality between Men and Women (see above).

At regional level, the Delegations for Women's Rights and Gender Equality play a proactive role in mainstreaming gender in regional policies through the Regional Gender-Equality Strategic Plans. Gender-equality policy arrangements vary widely across regions. The most recent policy development at the regional level regarding the implementation of gender mainstreaming is a governmental notice issued by the General Directorate for Social Inclusion in 2011. It provides a

[9] This table is based on the European Commissions strategy for equality between women and men 2010-2015 – it may help to structure the initiatives and think of everything relevant. The sub-topics are meant to give examples

comprehensive framework for the adoption of Regional Strategic Gender-Equality Plans, as part of an initiative co-funded by the EU through the PROGRESS programme. The ultimate goal of these plans is to 'establish a long-lasting and homogenous system covering the whole territory, and mobilise all actors to fully integrate gender into public policies'. These plans must be twofold, and address (1) gender equality in economic, professional, political and social life, and (2) gender-based violence. This institutional framing of regional plans also specifies the monitoring structure for their implementation, making regional prefects accountable, and also involving delegates at departmental level. Additionally, evaluation procedures are also addressed, emphasizing gender mainstreaming as a goal.[10]

The evolution in terms of gender equality related to (public) media (i.e. public radio and TV broadcasting) is a useful source of information for the analysis of the application of concrete policy initiatives. To give some further insights, it is interesting to observe that the national television broadcaster France Télévisions employs some 11,000 staff, of whom 43% are women. They are over-represented in areas like human resources and communication, but under-represented or absent in technical roles. There is also a very obvious 'glass ceiling'. Conscious of its responsibility as a public corporation to reflect the diversity of the French population, in 2011 France Télévisions adopted a diversity strategy comprising four pillars: gender, ethnic-cultural, socio-cultural and disability. In 2011 it decided to create a directory of experts whom programme-makers and journalists could call on. The company therefore asked specialist NGOs for nominations of experts with diverse profiles in terms of age, ethnic origin, disability, geographic location and, of course, gender. It received 400 suggestions, which it weeded down to 100 experts through a strict quality control procedure. The directory was then placed on the company's intranet. In the short period since its introduction, there has been a noticeable increase in the number of women appearing in expert roles in some programmes.[11]

In 2013, key French media organisations representing 61 TV channels, radio stations and print publications signed a self-regulation agreement undertaking to strive to increase the number of women experts appearing in their programmes and articles. The agreement had been prepared by the Commission on the Image of Women in the Media, which was set up by the secretary of state for solidarity, which comprised not only media and regulators, but also educators, lawyers, health professionals and NGOs. The commission monitors compliance with the agreement, and produces an annual report. Although the agreement was greeted with enthusiasm, it has had, at least in its early years, little concrete effect, and the share of female experts on air and in print has stayed at the low level of 18% across the three media. However a number of media organisations have taken steps which will have their effect over time. These include initiatives to recruit more women, in-house monitoring, working groups, awareness-raising, training and the designation of a contact person responsible for the act.[12]

[10] http://eige.europa.eu/gender-mainstreaming/countries/france/laws-and-policies

[11] http://eige.europa.eu/gender-mainstreaming/good-practices/france/france-televisions-aims-reflect-national-diversity

[12] http://eige.europa.eu/gender-mainstreaming/good-practices/france/french-media-sign-equal-airtime

2.1.4 General assessment of the effectiveness of existing equal opportunity / anti-discrimination legislation / measures

Although the process of implementing the directives has been a long one, the overall implementation seems to be satisfactory. In some respects, French law goes further than the European obligations, for example in providing for longer parental leave, for paternity leave, or by obliging the social partners to negotiate on the pay gap. However, even if the situation is formally satisfactory, for years there has been very little litigation on equality issues and, moreover, most of the litigation has concerned men claiming the same rights as women. Generally, the number of cases on discrimination brought before the courts is increasing. Lawyers, judges and the legal literature are becoming more familiar with the instruments on regulating discrimination and this will have consequences for sex discrimination. (EC 2015, Country Report Gender Equality: France, p39).

More generally and according to one of the experts contacted (interview with a sociologist dated 17/02/2017), the main obstacle to the effectiveness of measures favoring equal opportunities is the absence – or at least weakness – of sanctioning mechanisms. It is much easier for public authorities to send messages through symbolic measures than to "punish" companies and institutions not respecting commitments and legal framework.

Moreover, according to another expert (interviewed 27/02/2017) the tendency is rather positive. The different legal measures tend to reinforce each other. As a consequence, the visibility of these issues is also growing in the media which feeds an overall movement. The most important thing according to this expert is to keep momentum in the long run. The strongest achievement was reached under the form of zero tolerance for violence against women. There is a real social consensus on this matter. On the opposite, gender issues in the field of primarily and secondary education does not benefit from the same level of concern and social consensus, which makes progresses more difficult, in particular when it comes to fighting against stereotypes at school.

According to one of the interviewed experts (interview dated 17/02/2017), the pay gap issue is the one on which media focuses more, whereas policy makers tend rather to insist on debates related to representation of women in decision boards. From the perspective of a researcher specialized on gender issues, two main biases affect the relevance of public discussions and the efficiency of policy decisions. First, data used by the media are very imprecise (most of the time based on average values and computed in full-time equivalent). The consequence is a clear underestimation of the real pay (or rather financial resources) gap between women and men in France. Second, policy makers tend to favor symbolic decisions which can be easily communicated to the citizens and can be regulated by law without implying real financial efforts. The example given was that it is much easier to decide (and impose) parity in some academic boards than to develop daycare facilities at universities.

Another expert (interviewed the 21/02/2017) considers that in France mass media and research community are providing contradictory contributions to the gender equality debate. Even if media seem to be more and more aware of issues such as pay gap and inform consequently the public opinion, they carry mainly stereotypes. As an example, female TV journalists seem to be more selected according to their appearance than their male counterparts. On the opposite, researchers are extremely conscious of the impact of stereotypes but do not get a similar audience.

At the occasion of the national workshop (held in Strasbourg; 24/03/2017), the invited experts put forward following observations related to the efficiency of gender equality policies and initiatives in France:

- The policy aiming at combatting violence against women was a success because it was funded, it allowed collaborative work and it took into account all of the actors concerned by this kind of violence (the victims, the perpetrators and the children);
- For a policy to work, it is important to have the willingness to make it work, a good leadership and legal and financial constraints;
- Sometimes, society is not ready for certain types of policies (example of the law on gender classes in schools by Najat Vallaud-Belkacem).

2.2 Welfare and Gender Regimes

2.2.1 Fiscal policies

Within the EU, the tax system is seen as an important policy tool to increase the level of employment. In fact, the 1984 report of the European Commission (EC 1985) was one of the first official documents to disclose that European tax systems discouraged female labour market participation. The document puts particular blame on joint systems of taxation which manifestly favoured the traditional division of labour between a male primary earner and a female homemaker or secondary earner. Most countries now have introduced individual rather than joint taxation, yet elements of jointness are still present in the tax system of France, Germany, Ireland, Luxembourg and Portugal. In addition, the presence of other features in the tax systems, such as deductions for one-earner households, might still translate in a biased incentive structure (Bettio and Verashchagina 2013).

In case of transition from no paid work to gainful employment at specified levels of earnings, the measure is called Average Effective Tax Rate (AETR) (Carone et al. 2004, p.10). When the transition is from inactivity to work, the AETR is also known as 'Participation Tax'. It shows the amount of additional taxes and lost benefits relative to gross earnings for a person who has just entered or re-entered work. Again the higher the AETR the lower the incentive to participate in paid work (see also Bettio and Verashchagina 2013: 180)

Following the approach of Jaumotte (2003) we use the ratio of the AETR corresponding to a secondary earner in a household with two children and the net average tax rate accruing to a single person with the same level of income. Choosing the specific ratio as an indicator makes it possible to discern the extent of the relative disincentive of becoming employed that secondary earners face compared to equal-earning singles. The ratio is calculated for a family with two children of which the primary earner has an income of 100% of average earnings and the secondary earns 67% of average earnings. In the case of equal fiscal treatment of secondary earners and singles with the same level of income the calculated ratio should be equal to one. (Plantenga, J. 2014, P12) [13][14]

[13] http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no059_MS206.pdf

[14] The overall outcome seems to be in line with the outcomes of Jaumotte (2003), covering the situation in 2000-2001, although the relative ranking differs. When interpreting the data it should be kept in mind that the ranking is only based on the two-child-dual earner family in which 'he' earns 100% of average earnings, while 'she' earns 67%; the result might differ for higher income categories for example and for different (more equal) income constellations

Table 16: Fiscal incentive for secondary workers, 2011 – (sorted by AETR)

	secondary earner (AETR) Primary earner at 100% of AW and 2 children	Single (Net Personal Average Tax)	Ratio (Secondary earner/Single)
France	29,3	26,1	1,1
Unweighted Average	31,3	23,7	1,4
Unweighted Average without joint taxation countries	30	23,1	1,3
Unweighted Average for joint taxation countries (FR, DE, IE, LU, PT)	37,3	26,9	1,4

Source: European Commission (2013); OECD (2013), and OECD (2011) (Plantenga 2014, p41)

McCaffery (2008) refers in this respect to the dazzling complexity of the tax and transfer system: the 'fog of tax' is not likely to result in very consistent effects.

Synthesizing these results, it appears that the tax systems of most member states still feature rules and practices that discourage secondary earners either to participate at all or to increase the number of working hours. In addition, the child care costs could be interpreted as an implicit tax on the secondary earner, which in most member states is not fully recognized. This brings us to the issue of the care infrastructure and the nature and scope of family policy. (Plantenga, J. 2014, P13f)

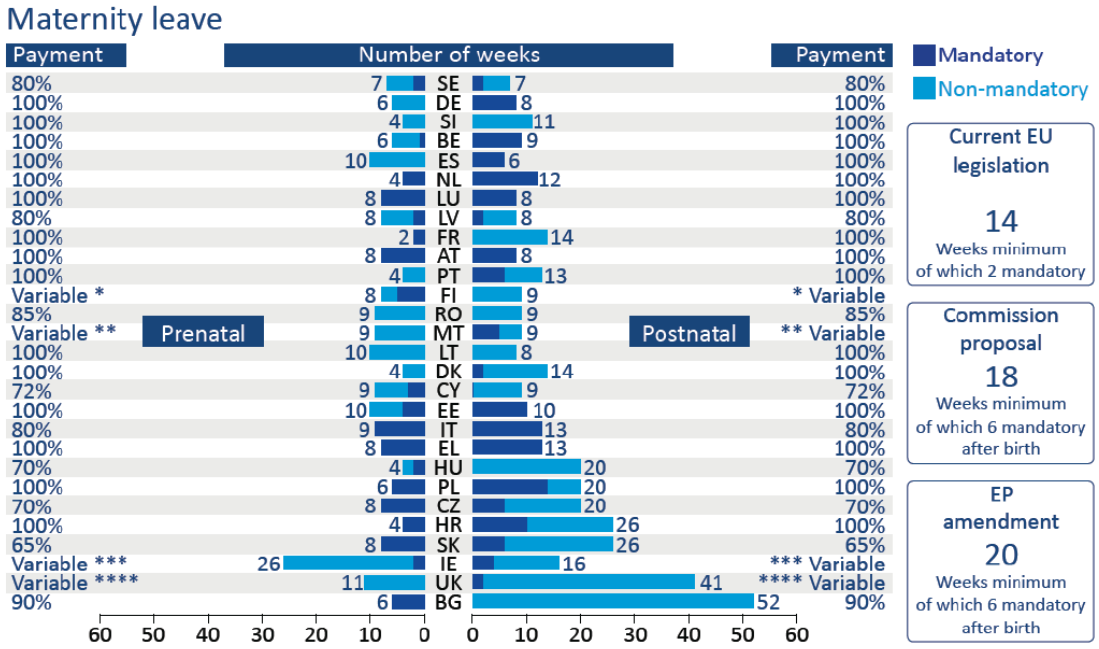
These observations are clearly true in the French case. In fact, several experts stress the fact that according to their analyses, the French fiscal regime has a negative impact on the participation of women to the labour market. Detailed analyses in this respect are provided by authors such as notably Echevin (2003), Carbonnier (2008) and Monnier (2010). Broadly summarised, the combination of the core principles of progressive taxation rates and the definition of the family (instead of individual persons) as taxation basic unit leads to a disincentive for a second source of income due to a higher marginal taxation rate.

2.2.2 Parental leave policies

2.2.2.1 Possible duration of maternity leave

In France, the period of maternity leave is six weeks before the presumed date of confinement and ten weeks thereafter (Article L 1225-17); the same provisions apply to civil servants (Article 34 of the 1984 Act, No. 84-16). (EC 2015, Country Report Gender Equality: France, p 19)

Figure 2: Comparison between EU-countries



Source: FEMM Committee 2015, p.114[15]

All in all, maternity leave is defined as a period of sixteen weeks: at least two weeks before the birth, the remainder can be taken before or after. It is obligatory to take leave. (Fagnani et al. 2016, p1)[16]

2.2.2.2 Possibility of paternity leave

Since 2001, paternity leave has been recognized for all fathers who are employees or civil servants. Since 2013, this leave can also be taken by the husband of the mother (even if he is not the father) and by the spouse or the partner of the mother. This leave is now called 'Paternity leave and settling-in leave' (Article L 1225-35 of the Labour Code). Paternity leave is eleven consecutive days for the birth of a child. Paternity leave is paid by the social security scheme up to a ceiling and could therefore be unattractive for executives. Some companies have adopted full pay for fathers in terms of a 'parent-friendly' measure. There is no condition as to the length of service. (EC 2015, Country Report Gender Equality: France, p 25). Leave must be taken within the four months following the birth. (Fagnani et al. 2016, p1)

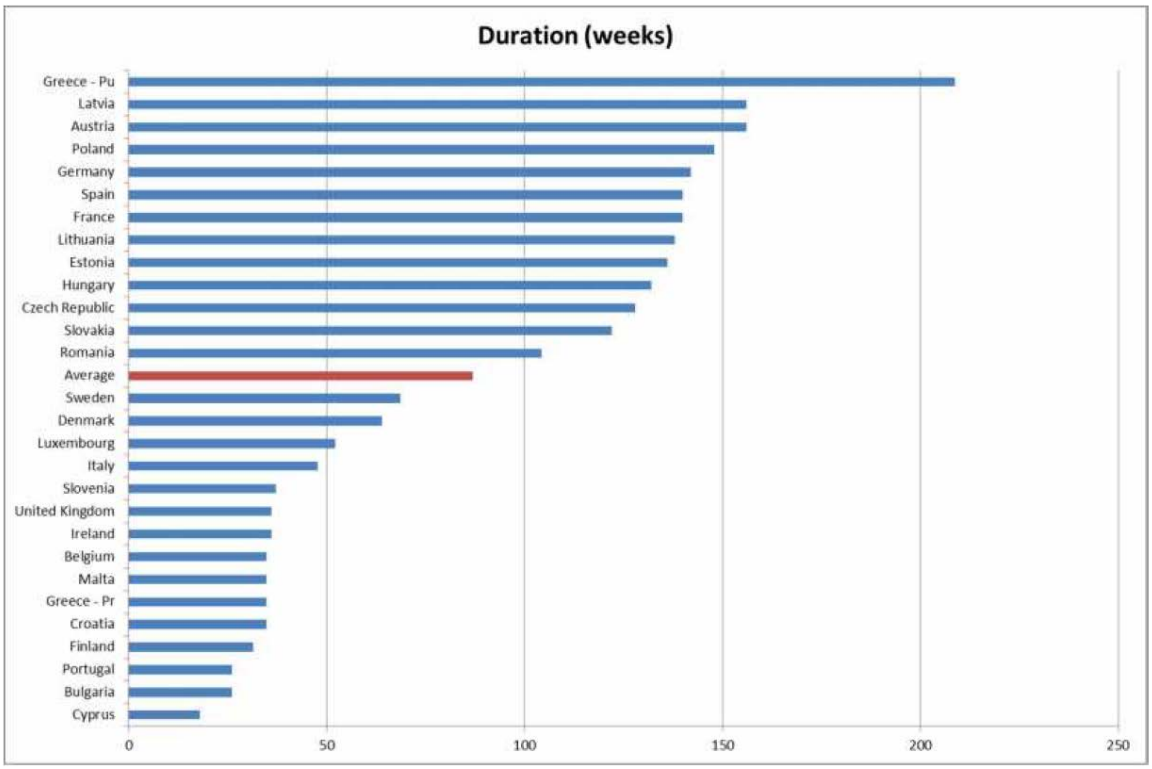
2.2.2.3 Possible duration of parental leave

The duration of parental leave is the same in the public and in the private sector even if two different types of legislation are applicable. The initial period of parental leave is one year and it can be renewed twice until the child is three years old. In the case of adoption, parental leave can also last for a maximum of three years after the child's arrival if the child was younger than three when adopted. In other cases, parental leave is for a maximum of one year. (EC 2015, Country Report Gender Equality: France, p 22). As next figure shows, the average duration (in days) of parental leave in France is strongly higher that what can be observed in most EU countries.

[15] http://www.europarl.europa.eu/RegData/etudes/STUD/2015/509999/IPOL_STU(2015)509999_EN.pdf

[16] http://www.leavenetwork.org/fileadmin/Leavenetwork/Country_notes/2016/France.pdf

Figure 3: Average duration (in days) of parental leave in EU countries



Source: FEMM Committee 2015, p.68

2.2.2.4 Who is entitled to take parental leave?

The right to parental leave is an individual right and it can be taken by both parents. Parental leave is not available in the case of surrogacy, as surrogacy is not legal in France. (EC 2015, Country Report Gender Equality: France, p 22)

2.2.2.5 Flexibility of parental leave arrangements

Parental leave can be granted on a full-time or part-time basis, although part-time leave must allow for at least 16 working hours per week. The overall duration is not depending on the choice of part-time or full-time leave (EC 2015, Country Report Gender Equality: France, p 22)

Parents taking leave may work between 16 and 32 hours per week.

- The fixed amount benefit can be received at full rate if the parent stops work completely or at a partial rate if the recipient decides to work part time; so if parents work part time, the CLCA/PrePaRe payment is reduced. If both parents work part time, they can each receive CLCA/PreParE but the total cannot exceed one full CLCA/PrePaRe payment. For the higher allowance paid for large families (COLCA and increased PreParE), one parent must stop work completely.
- Parents can take part-time Parental leave simultaneously. If they take it on a full-time basis, parents can be provided with CLCA/PreParE successively (i.e. only one parent receives the benefit at a time). (France 2016, p2)
- Employers can refuse to let parents work part time if they can justify this on business grounds. (Fagnani et al. 2016, p3)

2.2.2.6 Policies in place for supporting paternity leave or usage of entitlements by fathers

Social norms constitute clearly one obstacle for paternity leave since it was difficult for a long time for men to accept "not to work" when taking care of their children, independently from legal framework (cf. Boyer and Céroux, 2010). The basic principle of paternity leave after birth was instituted in 2012 and slightly improved on February 2, 2017. Paternity leave after birth for employees got prolonged from 11 to 14 calendar days recently by law[17], it seems nevertheless quite improbable that major changes will be undertaken soon.

Another form of paternity leave is the "*prestation partagée d'éducation de l'enfant (PreParE)*" adopted in 2015. In order to beneficiate from this possibility (up to one year) each parent must take a leave of the same duration (for instance 3 months each one), without any option of modularity (for instance 4 + 2 months). During the leave, no salary is paid but the parent concerned beneficiate from ca. maximal 400€ monthly support. So far, only few fathers decided to go this way since the financial disadvantage (comparatively to a full salary) is too important. [18]

2.2.2.7 Regulations and initiatives supporting parents returning to work

According to Article L 1225-25 of the Labour Code the employee has the right to return to the same or similar job after maternity leave with at least a similar remuneration. The wages must also be increased after the maternity leave in order to follow any general increases received by individual co-workers of the same category during the period of the employee's leave. In general, the worker is also entitled to all the advantages which have occurred during her leave that she would have been entitled to if she had not taken maternity leave. She is entitled to normal paid leave and to the normal rights to vocational training as if she had not been absent. (EC 2015, Country Report Gender Equality: France, p21).

After parental leave, the worker has the right to return to the same job or, if this is not possible, to an equivalent or similar job, where the same advantages apply as before. She/he also has the right to training if working techniques or methods have changed. The employer should offer the possibility of a special interview after the period of leave in order to discuss the worker's career path. (EC 2015, Country Report Gender Equality: France, p23)

2.2.2.8 Compensation rate for wages[19] for maternity leave

France belongs to the 13 Member States which cover 100% of previous incomes (the other ones being Austria, Croatia, Denmark, Estonia, France, Germany, Greece, Lithuania, Luxembourg, Malta, the Netherlands, Spain, and Slovenia). (FEMM Committee 2015, p36). The allowance during pregnancy is higher than the allowance in the case of sick leave, as the amount of the maternity benefit is based on the average salary (with a ceiling). Thus the maternity leave is 100 % of the average wage of the woman concerned up until the ceiling of EUR 82.32 per day. (EC 2015, Country Report Gender Equality: France, p20). In the public sector, the leave is fully paid (i.e. there is no ceiling). In the private sector, some employers (particularly larger companies) pay in full, others do

[17] http://lentreprise.lexpress.fr/rh-management/droit-travail/le-gouvernement-s-oppose-a-l-allongement-des-conges-maternite-et-paternite_1875619.html

[18] http://www.capital.fr/carriere-management/actualites/conge-parental-malgre-la-reforme-il-reste-peu-utilise-par-les-peres-1162371

[19] *% of wages covered by leave benefits during leave period*

not. Maternity leave is funded from health insurance, financed by contributions from both employees and employers. The total amount of this contribution is 15.45 per cent of gross pay, including all social contributions, with employees contributing 2.35 per cent and employers 13.10 per cent (Fagnani et al. 2016, p1)

2.2.2.9 Compensation rate for wages[20] for parental leave

Childcare allowances or childrearing benefits - *Complément de libre choix d'activité*" (CLCA) and *Complément optionnel de libre choix d'activité* (COLCA) – were previously available to all families who met the eligibility condition, whether or not parents take Parental leave. Since 1 January 2015, the CLCA/COLCA have been revised and replaced by 'PreParE' ('*Prestation partagée d'éducation de l'enfant'*, Childrearing shared benefit). CLCA and COLCA continue to be paid to families with a child born before 1 January 2015. The benefit amount is income-related (approximately €391 per month for PreParE) and dependent on working time (for CLCA/COLCA and PreParE).

For parents with *two or more children* (under 20 years of age), CLCA and PreParE can be paid until a child is three years old. However, in the case of PreParE the payment can be made for a maximum period of 24 months to any one parent, which means that the remaining 12 months can only be received by the other parent, who must stop employment or reduce working hours. For parents with only *one child*, CLCA is paid until six months after the end of the Maternity leave. However, in the case of PreParE the payment is extended for a maximum period of 12 months, but only for six months to one parent, which means that the remaining six months can only be received by the other parent, who must stop employment or reduce working hours. COLCA is available to large families (with at least three children): a flat-rate payment of approximatively €800 is made on condition that one parent stops working completely. However the duration is only for one year. Large families can choose between COLCA and CLCA.

CLCA, COLCA and PreParE are paid by the local CAFs (*Caisse des allocations familiales*), the Family Allowance funds that are part of the social security system and provide a wide range of benefits for families with children. CAFs are financed by contributions from employers only, amounting to 5.4 per cent of gross wages, and not by employees unlike the Maternity and Paternity leaves that are funded from the health insurance scheme.

Non-employed parents (including those taking leave) receive pension credits for childrearing: '*Assurance vieillesse du parent au foyer*' (Avpf). Avpf is paid by the local CAFs (*Caisse des allocations familiales*) to guarantee retirement rights to people who stop or reduce their professional activity to take care of one or several children or a handicapped person.

2.2.2.10 Additional paid leave for working parents

Parents are entitled to three days per year to take care of sick children who are less than 16 years old. They are entitled to five days if the child is aged less than one year or if they have at least three children (Article L 1225-61 of the Labour Code).

In cases of the serious disability or illness of a child under 20, every employee with at least one year of employment with an employer is entitled to unpaid leave to care for his/her child or to work part time for a period of up to three years (Article 1225-61 of the Labour Code). A period of leave for six months is possible for employees who need to care for a relative (either a child or a parent living in

[20] *% of wages covered by leave benefits during leave period*

the same house) who is at the end of his or her life. In this case, the Labour Code explicitly provides that this leave can be taken in the form of part-time working, with the agreement of the employer (Article L.3142-16 of the Labour Code).

Since 2014, employees can also donate their day off to a parent of a seriously ill child (Article L1225-65-1). (EC 2015, Country Report Gender Equality: France, p25)

2.2.2.11 legal right to reduce working time on request

The Labour Code recognises the right for a worker to work part time (Article L.3123-5 and L3123-6 of the Labour Code). That right should preferably be organised by a collective agreement (Article L.3123-5 of the Labour Code), but in the absence of any such agreement the law prescribes the procedure to be followed (Article L.3123-6 of the Labour Code). This right is recognized for every worker without any specific condition being attached. The employee concerned initiates the procedure by informing the employer in writing of his or her wish to transfer to a part-time job, stating in that letter the desired working hours and the date envisaged for their introduction. The letter of request must be sent at least six months in advance. The employer is required to reply within three months and can refuse such a request on two grounds: either because no comparable job exists in the company, or because he or she can demonstrate that the transfer requested will have harmful consequences for production and the company's satisfactory operation. The decision of an employer to refuse the request can be challenged in court, but there have been no known decisions by the Cour de cassation on this issue. It is difficult to ascertain whether this right is actually being used by workers or not. For public servants this right is also recognized and seems to be more effective. Public servants can ask to work part time and the administration can only refuse if such a refusal is based on the needs of the service; a refusal can be challenged before a joint administrative committee (Article 24, Law no. 84-16).

Workers can also request annualised part-time hours (Article L. 3123-7 of the Labour Code). On the basis of their family commitments, employees can request a reduction in their working hours in the form of a leave of absence for one or more weeks. This offers employees with dependent children, for example, the opportunity to reduce their working time to correspond with the dates of the school year. (EC 2015, Country Report Gender Equality: France, p26)

2.2.2.12 Protection against dismissal

Article L 1225-4 of the Labour Code prohibits the dismissal of an employee when she has been medically certified as being pregnant. The dismissal will also be null and void if the employee sends a certificate proclaiming her pregnancy in the two weeks following the notification of her dismissal. The prohibition on dismissing a pregnant employee also applies during maternity leave and during the following four weeks. A dismissal is only possible in the case of gross misconduct which is not connected to her condition or if the employer cannot maintain the contract of employment for a reason not connected to her condition. In any case, the dismissal cannot be notified during the periods of the suspension of the contract of employment. Thus an employee cannot be made redundant during maternity leave. (EC 2015, Country Report Gender Equality: France, p19)

2.2.3 Empirical Evidence for Gender Regime

2.2.3.1 Usage of parental leave

It is impossible to calculate the number of parents on Parental leave because employers are not required to provide information about take-up. Statistics are limited to CLCA, and it is not possible to find out how many recipients of CLCA are also on Parental leave. Research provides evidence that women make up 98-99 per cent of parents taking leave. It also suggests that mothers who were in employment just before taking Maternity leave are more likely to claim CLCA *if* they are entitled to Parental leave because they have a job guarantee. With high unemployment, most working mothers who are not entitled to Parental leave cannot take the risk of losing their job unless their partner has secure employment. Mothers are more likely to claim Parental leave and CLCA when they face demanding working conditions, for example atypical/non-standard working hours or 'flexible' hours imposed by employers. It has been hypothesized that one of the factors explaining the high take-up of these entitlements is the deterioration in working conditions in recent years. From this perspective, taking Parental leave with CLCA is one way to escape a job with difficult working conditions that create difficulties for workers trying to combine paid and unpaid work

A number of factors help to explain why fathers are so reluctant to claim Parental leave, including: the unequal gender distribution of domestic and child-raising tasks within the family still persisting in France; traditional value systems; in most couples, the man earning more than the woman; and a workplace culture in the private sector that makes it difficult for a man, in particular at management level, to take Parental leave. The small number of fathers who take CLCA full time are mostly blue-collar workers or employees with a stable job beforehand. Compared to fathers who do not take Parental leave, they are more likely to work in female-dominated sectors and to have partners with a higher level of education, a higher status job and higher earnings. Besides, the majority of fathers on Parental leave take it on a part-time basis.

The number of parents receiving CLCA has been decreasing, falling from 670,000 in 2007 to 492,800 by the end of December 2014 and the majority of beneficiaries receive full rate childrearing benefit (55 per cent). The proportion of the CLCA paid to parents who choose to work part-time during Parental leave has gone up, though it remains less than the amount paid to those who stop working completely. This financial incentive has, therefore, proven its efficiency and has sharply increased the number of recipients working part time while receiving the benefit. (Fagnani 2016, p5f)

2.2.3.2 Average duration of parental leave periods by sex (measured in days);

Data about the average duration of parental leave by sex cannot be found in the case of France, but according to the national office for statistics (INSEE: Institut national de la statistique et des études économiques) only one of nine men do interrupts partially (i.e. at least one month) or totally his professional activity besides parental leave. [21]

According to the same survey, 98 % of the investigated fathers and 72 % of the investigated mothers did not make a full use of their parental leave for different reasons. Moreover, 46% of the fathers and 25% of the mothers declare not being interested by their right to benefit from a parental leave.

[21] http://www.parents.fr/etre-parent/droits-et-administratif/reforme-du-conge-parental-les-peres-en-ligne-de-mire-79818

The analysis points that the propensity not wanting to take a full time parental leave grows with the level of education of the parents.

2.2.3.3 What are the main barriers for increasing the participation of men in parental leave?

Several obstacles are suggested by experts (Boyer and Céroux , 2010) but two main categories can be identified. At first, psychological reasons: fathers are afraid of a) losing their jobs; b) not being able to take properly care of their very young children; c) not to be fully recognized as men since they are "not working" for a while. Second, financial reasons: a) for the duration of the leave the compensation (ca. 400€ monthly) may represent a major loss of resources, b) the pay gap represent in most cases a disincentive for men to take a leave, c) the leave may constitute a negative signal for wage increases once returning to the job.

2.2.3.4 Fertility rate

Table 17: Fertility rate, total (births per woman):

	2006	2007	2008	2009	2010	2011	2012	2013	2014
EU28	1,53	1,56	1,61	1,60	1,61	1,58	1,58	1,54	1,54
France	2	1,98	2,01	2	2,03	2,01	2,01	1,99	1,99

Source: Worldbank: http://data.worldbank.org/indicator/SP.DYN.TFRT.IN?end=2014&locations=AT&start=2005

The fertility rate in France was not varying significantly over the past decade but is clearly higher than the EU average. Usually, the main reasons advanced as an explanation are of cultural nature (having children are not seen as a factor clearly stopping women's presence on the labour market) and related to the relative young age of schooling.

2.2.3.5 Women not working or working part time because of inadequacy of childcare services

Table 18: Impact of the inadequacy of childcare services as a reason for women (aged 15-64 and with children up to the mandatory school age) not working or working part time

	Children younger than 3		Children between 3 and the MSA	
	Absolute value: adequate chilcare services are not available or affordable	Relative value: % of mothers who do not work or work part time	Absolute value: adequate chilcare services are not available or affordable	Relative value: % of mothers who do not work or work part time
EU27	1.982.543	23	1.441.445	18
France	196.534	19	129.439	16

Source: EC: Barcelona Objectives: http://ec.europa.eu/justice/gender-equality/files/documents/130531_barcelona_en.pdf (page 34)

Figures related to the inadequacy of childcare services in France are very close to the EU average which seems to indicate that the French situation in this respect is neither particularly positive nor particularly negative.

2.2.3.6 Main reasons for women not working or working part time

Table 19: Main reasons for women (aged 15-64 and with children up to mandatory school age) not working or working part time by perceived shortcomings of childcare

	Not available	too expensive	insufficient quality
EU 27	25	53	4
France	33	57	

Source: EC: Barcelona Objectives: http://ec.europa.eu/justice/gender-equality/files/documents/130531_barcelona_en.pdf (page 35)

Again, no French specificity can be detected concerning the main reasons explaining why women do not work or are working part time.

Table 20: Percentage of children in formal childcare (2012)

	below age 3			between age 3 and compulsory schooling age		
	1-29 hours	30 hours +	total	1-29 hours	30 hours +	total
EU28	15	15	30	37	46	83
France	18	26	44	43	52	95

Source:http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no059_MS206.pdf

The proportion of children in formal childcare is significantly higher in France compared to the EU average. This may be explained by family structures and availability of child care infrastructure.

2.2.3.7 Time spent on unpaid work

Table 21: Time spent in unpaid, paid and total work, by sex.

	paid work		unpaid work	
	Women	Men	Women	Men
OECD Average	215,3	328,5	271,7	137,6
France	172,5	233,4	232,5	142,7

Source: http://www.oecd.org/gender/data/time-spent-in-unpaid-paid-and-total-work-by-sex.htm

The data presented in the table above (for 2009) show that interestingly on average both men and women work on average less in France than in the OECD countries, at the exception of the average duration of unpaid work of men which is significantly higher than the OECD average. No significant factor can be identified with certainty but some possible explanations may be found in cultural attachment of men to certain forms of domestic work such as cooking or food shopping for instance.

2.2.4 General assessment of the Gender Regime

Some 15 years ago Pfefferkorn (2002, p. 87) pointed that French public policies supporting a better "working time – family time" balance and policies favouring a better insertion of women in the labour market were ambivalent if not contradictory or counterproductive. His main argument was that the crucial element constituted by the double "work load" of women (i.e. paid work and domestic work) was not taken into account in these policies. A sociologist was asked about progresses in between, who stated that the situation improved over the years, but only slowly (interview 17/02/2017). The main progress results from the promulgation of laws incorporating sanctions for companies not respecting them. Nevertheless, one may consider that the application decrees still offer possibilities to get around the concerned laws.

2.3 Gender equality policies in RTDI (Current developments)

2.3.1 Description of overall strategic gender equality policies in RTDI in place

The "*Plan d'action*" of the Ministry for Education, Higher Education and Research[22] provides a detailed overview of the French gender equality policies in RTDI. Interestingly, the document was developed in cooperation with the Ministry for Women Rights (Ministère des droits des Femmes) which may be interpreted as a sign of the importance devoted to this issue by the authorities in charge of science and higher education. The philosophy is to deploy an overall strategy that is not confined to RTDI but to adopt the national public efforts targeting gender equality in adapting and reinforcing them specifically to the field of science and higher education. It is also worthwhile to notice that the privates sector is not mentioned (for example high tech industries or start-ups). In this respect, the strategy is clearly confined to the public sector.

The 8 measures (corresponding to 40 specific actions) detailed in the document can be roughly summarised along three strategic axes:

1. Establishing gender equality as a basic principle of the so-called "*dialogue contractuel*" (a form of pluriannual financial negotiation) between the ministry and the universities (and further research organization) depending from the ministry. Nevertheless, no precise indications are given, notably in terms of negative financial impacts on the institutions not progressing enough toward gender equality.
2. Ensuring a gender balance in decision bodies of universities and further research organisations (in particular through obligatory balanced lists of candidates for elections).
3. Supporting gender research (notably through an orientation given to some programmes of the research funding by the national agency in charge of research funding (ANR)).

   The legal basis of this strategic plan is mainly anchored in the general laws promulgated for ensuring gender equality in the public sector (see below).

On 28th January 2013, the Ministry for Education, Higher Education and Research signed the Charter for Equality between Women and Men in Higher Education, with the Ministry for Women's Rights. The Law of 22th July 2013 on Higher Education and research introduced the set-up of "units" for Equality between Women and Men in HEIs; gender balance in all governing councils of these institutions; and sex-disaggregated data. The 2015 MENESR road-map on gender equality was published in May. Drawing from the 2015 "L'état de l'emploi scientifique en France –Rapport 2014",

[22] http://www.enseignementsup-recherche.gouv.fr/cid70662/egalite-entre-les-femmes-et-les-hommes-plan-d-action-du-m.e.s.r.html

the road-maps starts with taking stock of the measures taken as a consequence of the Law of the 22nd July 2013 and then turns to present the policies to be implemented in the field of higher education and research. (EC 2015, Rio Country Report: France, 2015, p70).

In 2013, the Ministry of Higher Education and Research developed a national gender action plan. As part of this action plan the Ministry decided to introduce gender provisions in the contracts it signs with each Higher Education and Research institution every five years, including concrete objectives and assessments. In addition, the Higher Education Institutions (HEIs) are implementing the Equality Charter which applies to the general policies of the HEIs which have adopted it, notably by requiring gender-sensitive communication, sex-disaggregated data, awareness-raising and preventing violence against women.

The Act of 22 July 2013 on higher education and research makes it compulsory for HEIs to have a structural equal opportunities programme. Gender balance is a prerequisite of nominations to the governance entities and of election lists in HEI's, and a number of government bodies in the fields of education and research. Statistics relating to national higher education and research strategies must be sex-disaggregated. The ministry published a roadmap in 2014 identifying a series of actions to be taken to implement these objectives, and provided training on gender issues, fight gender stereotyping and violence against women, and improve women's career opportunities. Gender equality promotion in the research profession is being tackled in various ways and at various levels. (Deloitte Researchers´ Report France 2014, p7)[23].

A very recent development in France is the emergence in 2016 of documents reflecting a "philosophy" of convergence of gender issues in secondary and higher education.[24] Up to this date the general feeling was that these two "worlds" were considered separately. This may to a certain extent be interpreted as a sign of a growing acknowledgment by the public sector of the importance of equality in education.

2.3.2 Main challenges concerning GE in RTDI

Some analyses of the gender issue in RTDI point a national specificity, which would explain that France lags somehow behind the Anglo-Saxon academic world (ANEF, 2014). According to these analyses, a divergence progressively grows between gender studies as a field (which is still less accepted in the French academic world than in other countries) and feminist engagement. This is seen as counterproductive when compared to the results benefiting the countries that are the most advanced in this regard.

During the interview given by a researcher specialised in labour economics (dated 21/02/2017), it appeared than the issue of gender inequality is more subtle in the academic world than in companies. According to this expert, universities and research organisations are not ruled by the same implicit codes than companies. As a consequence, the situation may be worse in universities than in big companies. The difference seems to be anchored in differences in terms of motivation. Codes in companies seem clearer than in universities for instance. As a consequence, women motivated by careers in the private sector better "fit" to their professional environment (even if they encounter difficulties in reaching higher positions°. Whereas in the higher education and research

[23] http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies#links_policies

[24] http://www.education.gouv.fr/cid99783/mardi-8-mars-2016-journee-internationale-des-droits-des-femmes.html#Feuille_de_route_2016_pour_l_egalite_entre_les_femmes_et_les_hommes_les_priorites

sector, the motivations of women choosing this path become less and less compatible with the invisible codes of academia. The "publish or perish" philosophy seems to constitute a good example of this evolution according to this expert.

2.3.3 Policy measures promoting gender equality in RTDI

According to another expert (interview 27/02/2017), policy measures promoting gender equality in RTDI must be seen from a systemic point of view. Considering the three ERA objectives, they need to be equally addressed but in fact the level of progresses was not the same. The three objectives are interrelated but according to this expert the reinforcement of gender issues in teaching and research is the necessary condition for real long term progresses. What happened in reality is that promoting equality in careers between women and men was the first preoccupation, which led in a second step to the question of gender balance in decision taking. During this time, gender focussed teaching and research played rather a role as background of the evolution.

2.3.3.1 Measures addressing GE in scientific careers

Some measures (see below) illustrate the current progresses in terms of gender equality in scientific careers.

The **Conférence Permanente des Chargé-e-s de Mission Egalité et Diversité de l'Enseignement Supérieur** (CPRD, created 2011). It is based on recommendations from the Rectors' Conference on gender equality. The University of Strasbourg was at the origin of the creation of a permanent conference of equality and diversity officers in higher education and research. Fifty-one universities have so far joined this network whose primary goal is the exchange of best practices, notably in human resource management.

Mission pour la place des femmes au CNRS (2001-ongoing): The National Centre for Scientific Research (Centre National de la Recherche Scientifique - CNRS) is the largest French research organization. It established an Office focusing on the place of women in science in 2001. CNRS was the first public research institution in France to set up an operational structure to foster gender equality within the organization and promote full participation of women in scientific research. The "Mission" reports directly to the President of the CNRS. The CNRS in 2013 organised a series of awareness and capacity-building workshops on gender equality with one-day training schemes, including presentations on the status of women at CNRS, indirect discrimination in research careers, gender stereotypes, etc. The target publics were Human Resource and Communication Officers as well as research institutes' administrative directors, regional delegates and central department managers. The CNRS organises regular conferences on gender and science.

The Paris Diderot University (Université Paris Diderot, Paris 7) in 2010 created an **Equality Centre** to promote and favour gender equality. The Centre carries out surveys, organises training courses and awareness-raising actions (informing students and academics) but it also applies the Equality Charter between Men and Women thus devising policies and actions promoting women in its institution. They are currently involved in the TRIGGER EU-funded project on structural change. (Deloitte Researchers´ Report France 2014, p7).[25]

Agreement on Professional Equality between Men and Women (Accords sur l'Egalité Professionnelle entre les Hommes et les Femmes à l'IFREMER) (2008 and 2011): *IFREMER (Institut*

[25] http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies#links_policies

français de recherche pour l'exploitation de la mer) [marine research institute] in 2008 signed an 'Agreement on Professional Equality between Men and Women' to promote attractive employment conditions. That first agreement ran until 2011 and has been renewed until 2014. Its goals are to:

- Ensure gender balance in recruitment, promotion, and other committees;
- Encourage trade unions to achieve gender balance;
- Ensure that no gender factor will be taken into account in career development;
- Establish a monitoring committee to oversee implementation of the agreement.

The CNRS is a major partner in the **INTEGER (Institutional Transformation for Effecting Gender Equality in Research)** project. This began in March 2011 and will last until February 2015. It is funded through the European Commission's Science in Society FP7 Programme (call FP7-SCIENCE-IN-SOCIETY-2010). The objectives of INTEGER are to:

- Create sustainable structural change to improve the career paths of women researchers in STEM through the implementation of gender action plans;
- Use and assess a variety of tools and techniques to support an effective and comprehensive organisational gender management strategy and share experience, tools and learning, through guidelines, case studies, role models, publications, public speeches and other means of dissemination.

The five-year action plan covers four key themes:

1. Empowerment of decision makers;
2. Organisational structures;
3. Career progression, development and support; and
4. Work-life balance.

(Deloitte Researchers´ Report France 2014, p8).[26]

Agreements on Professional Equality between Men and Women (Accords sur l'Egalité Professionnelle entre les Hommes et les Femmes à l'IFREMER) (2008-2014): The three-year agreements signed between IFREMER and the labour unions recognize the importance of professional equality, in particular in terms of access to employment, professional training and career development (mobility, promotion and salary) as well as work-life balance. IFREMER has agreed that the percentage of women promoted every year should be at least equivalent to the percentage they represent in their category. Recruitment salaries are based on qualifications (diplomas) and experience. These guarantee identical pay between men and women. IFREMER has also established specific measures so that when working in the field (at sea and on ships), women can lead missions as easily as men. IFREMER integrates work-life balance in its agreements with labour unions, thus ensuring fair career development, through various initiatives, such as:

- Flexible working hours;
- Video conferences or conference calls in preference to travel;
- Meetings between 9:00 am and 5:00 pm, and not on Wednesdays (when children do not go to school in France) or school holidays; and

[26] http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies#links_policies

- Part-time work (equal salary, equal promotions and bonuses, equal level of responsibility).

The universities of Strasbourg and Haute-Alsace are part of the '**Dual Career Network'** with the universities of Freiburg (Germany) and Basel (Switzerland), and the Karlsruher Institut für Technologie (KIT, Germany). The network welcomes couples, helps them search for jobs in nearby universities or within the same geographic area, and assists them with accommodation and childcare. 'Dual Career Couples' are those in which each spouse has a university degree or equivalent. The network meets twice a year and works on the recruitment procedures of each country, possible salaries and potential positions, putting in contact candidates and university departments or laboratories.

Parental leave: A 2012 decree on maternity leave in higher education and researchclarified and stabilised the situation of women and men in relation to maternity, paternity and adoption leave by guaranteeing that:

- Women can take the equivalent of one semester in maternity leave, irrespective of whether the period of level falls in term-time or during the vacation;
- Irrespective of when they give birth, their right to annual holidays will be maintained and not replaced by maternity leave;
- Adoption leave is provided; and
- Men and women can ask for a "Leave for Research and Thematic Conversion" (CRCT) after maternity or parental leaves. CRCT beneficiaries are meant to work on a research project for 6 or 12 months without any teaching involvement. Therefore, it is possible to come back from maternity or parental leave and have some time to focus specifically on research before starting again with both teaching and research.

In fact, the decree allows universities and institutions to go still further and adopt even more gender-sensitive measures. As a result, universities, such as Paris Diderot, can systematically allow CRCT beneficiaries to continue with their research at the end of their maternity leave or decide not to limit leave to maternity but also to provide paternity or adoption leave for both parents.

Finally, compared to the three years prior to adoption of the new law when the parental leave (for both men and women) was counted as equal to 1.5 years for promotion, the law13 now (since 2001) ensures that parental leave equals 2 years in a civil servant's career.

French law guarantees maternity leave and applies to research institutions. Women are normally paid by their employers during this leave and their contract can be extended. If the project would otherwise end during the maternity leave, it is in general extended, as is the funding.

The replacement of women on leave depends on each institution. In IFREMER, for example, the replacement in the team of the person on maternity leave is systematic and women on maternity leave have the same career development as those working (general bonuses, etc.) As part of its gender equality agreement, IFREMER implements specific salary measures to combat inequalities between women and men caused by interruptions to employment (maternity or adoption leaves, or part-time work). (Deloitte Researchers´ Report France 2014, p10)

2.3.3.2 Measures addressing Gender balance in decision making

In 2011 the French government decided to ensure that electoral rolls for university and research institution boards are drawn up with the objective of having gender-balanced representation.

Furthermore, quotas were introduced in the following articles of a Law of March 12, 2012 relating to various aspects of the civil service, including the fight against discrimination.

- Article 52: the Boards of Directors and Supervisory Boards of state-owned enterprises are required to include 20% of each gender the first time they are renewed after passage of the law, and 40% by the second renewal.
- Article 55: From January 1st, 2015, the administrative authorities in charge of recruitment or promotion of personnel must ensure that juries and selection committees include a minimum of 40% of each gender. However, there are mechanisms for exceptions to the rule if there are specific recruitment problems or needs specific to a particular type of employment (*statut particulier*).
- Article 56: Since January 1st 2013, at least 40% of new senior appointments each year in central and most types of local government, as well as hospitals, have had to be of men and 40% of women. Financial sanctions are provided for if the law is not respected.

If the 40% threshold will not be reached for the under-represented gender by 2018, financial sanctions will apply to the administrative entity which has failed to comply. While the law does not apply to the administrations of universities or higher education and research institutions, the ministry Gender Action Plan (GAP) extends the financial penalties to Higher Education and Research governance as well and as a result, the target has been included in the 2013 Act on research. (Deloitte Researchers´ Report France 2014, p. 9).

2.3.3.3 Measures addressing the integration of gender dimension in research

In 2012, the Ministry for Higher Education and Research sat up a commission aiming at defining a research agenda for gender research and teaching as an academic field. Twenty propositions resulted from this work (cf. MESR, 2013b, pp. 5-6). Some of them were targeting directly gender research in terms of research projects funding and of supporting academic publications and specialized journals.

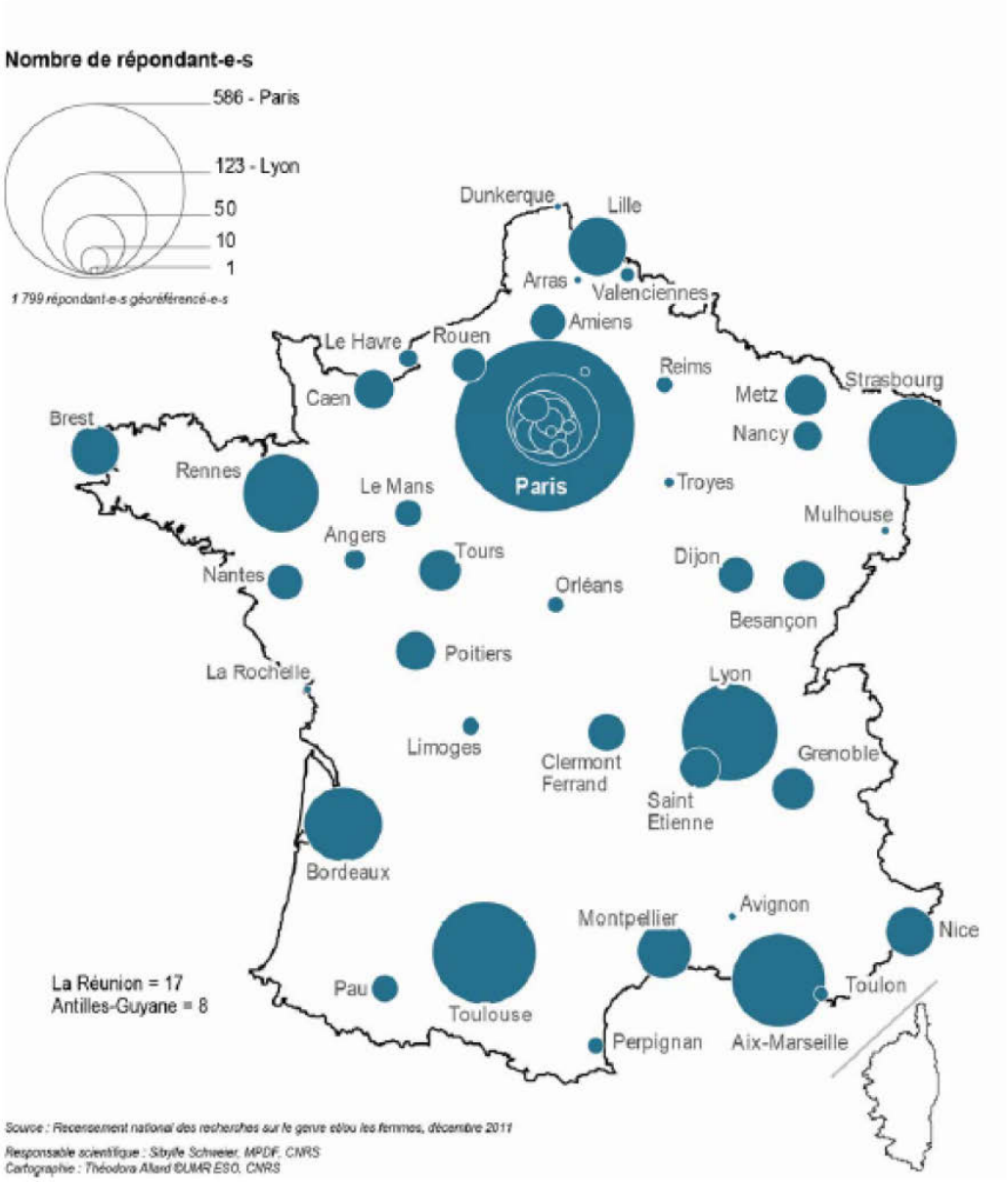
Moreover, the project provides a detailed analysis of the gender research landscape in France, in particular how this field is structured, both in terms of academic issues and in terms of institutions (labs) involved. Concerning academic issues, the report stresses that the emergence of gender research in France is helpful for compensating different “historical gaps”, favoring notably the development of new tools for investigating today’s world based on the use of interdisciplinary approaches. Concerning the institutional landscape involved in gender research, the work performed by the experts identifies the labs and research team structuring the field in France (see next figure).

Figure 4: The organizations devoted to gender research in France (stand 2012)

Source: MESR (2013b, p. 23)

Moreover, a survey was organized in order – between others – to identify the location of gender researchers (see next figure). A clear concentration (that may correspond to a significant statistical overrepresentation) of gender researcher answering the survey is to be observed in the greater Paris area. Nevertheless, the figures as such are not sufficient for establishing a bias related to the geographic spread of gender research within the French academic community.

Figure 5: Mapping of researchers involved in gender analyses



Source: MESR (2013b, p. 14)

2.3.4 Actors responsible for GE in RTDI

The Strategic Research Council was established on 19 December 2013, replacing the High Council for Science and Technology (HCST), founded in 2006. The Council will include 16 to 24 members, and will strictly respect gender equality. (RIO COUNTRY REPORT 2014, p 16)

The Ministry of Higher Education and Research in 2001 created an Office dedicated to equality in science and technology. Until 2014, the Office was responsible for setting up strategies for equal opportunities and the fight against discrimination in HEI and in the dialogue between them and the Ministry. One of its working groups ("Europe" Group) focused on sharing best practices from

Member States and Associated Countries among universities and research institutions. (Deloitte Researchers´ Report France 2014, p7)

Moreover, a systematic integration of gender equality was introduced in the contractual dialogue between the Ministry of Higher Education and Research, universities and research organisations. (…)In addition, the Charter for Equality was signed between the Ministry of Research and the Conference of Rectors and the Head of Schools of Engineers at the beginning of 2013. The share of research funders in France who responded to the survey and support national policies on gender equality in public research is lower than the EU average (France 2,8%; EU 82,2%). Within the ERA-compliant cluster in France, the share of research-performing organisations that have adopted Gender Equality Plans is higher than within the EU ERA-compliant cluster. (France 88,4%; EU 64,0% ; ERA Facts & Figures 2014 country fiches, p 281).

2.3.5 Assessment of Gender Equality Policies in RTDI

Assessing gender equality policies in RTDI at this stage is quite difficult. The elements that can be brought into perspective are rather qualitative so far. An interview (dated 16/03/2017) revealed that in the case of universities two very different dimensions must be taken into account. The first dimension is a university seen as an employer; the second dimension considers universities as producer of knowledge (through research and education). In addition, evolutions in the RTDI sector (and consequently the impacts of equality policies) are strongly influenced by evolutions in the rest of the economy and more generally the society.

This being said, it is important according this expert to distinguish between policies with immediate effects and policies influencing the long run:

- A good example for immediate effects is a policy defining quotas. This may strongly impact positively the access of women in science to decision-making instances. In this respect, the University of Strasbourg was a front-runner in France with very quick results affecting recruiting mechanisms.

- Incitation policies can only generate results in the long run, for instance when it comes to attract (young) women towards natural sciences. The introduction of two – obligatory – series of lectures about gender issues in two pilot programmes at the University of Strasbourg provides an example of surprising long-term effects. Four years later, different incidents implying verbal sexual harassments were revealed by students formerly enrolled in these courses. They declared afterwards that taking part to these courses was for them a symbolic signal given by their university that in fact, such issues matter.

Similar indications were gained with the help of one interview (dated 17/03/2017) and of the discussions that that took place during the national workshop on the 24/03/2017. Interestingly, the question of fighting stereotypes appeared to be of crucial importance. In addition, it was stressed at several occasions that only systemic policies (to be evaluated in the long run) can really affect the whole RTDI sphere.

3 Gender equality in RTDI

3.1 Gender Equality in RTDI on organizational level

The figures displayed in the following sections may be surprising if not contradictory. How can it be that the proportion of RPOs that have adopted gender equality plans is only slightly higher than the EU average whereas the proportion of R&D personnel working in RPOs that have adopted gender equality plans is extremely high (over 90%)?

The most plausible explanation is that there are numerous small-sized RPOs (some of them being a research team) which did not adopt such a plan whereas big players such as CNRS, CEA, larger universities, etc. are the employers of a large majority of French researchers and are all engaged in gender equality processes.

3.1.1 Proportion of RPOs that have adopted gender equality plans

Table 22: Proportion of RPOs that have adopted gender equality plans, 2013

	2013
EU 28	36
France	40

SHE Figures 2015, p.116 (data only for 2013) (based on ERA Survey 2014) [27]

3.1.2 Proportion of R&D personnel working in RPOs that have adopted gender equality plans

Table 23: Proportion of research & development personnel working in RPOs who adopted gender equality plans, 2013

	2013
EU 28	70
France	92

SHE Figures 2015, p.117 (data only for 2013) (based on ERA Survey 2014):

[27] https://ec.europa.eu/research/swafs/pdf/pub_gender_equality/she_figures_2015-final.pdf

3.2 Participation of women in tertiary education

3.2.1 Share of tertiary educated population among the group of 25 to 34 years old by sex

Table 24: Share of tertiary educated population among the group of 25 to 34 years old by sex*

	SEX/TIME	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	28,3	29,2	29,9	30,9	32,3	33,3	34,4	35,5	36,5	37,2	37,9
	Males	25,4	25,9	26,4	27,2	28,2	29,1	30,0	30,8	31,7	32,5	32,9
	Females	31,1	32,5	33,6	34,8	36,4	37,6	38,8	40,2	41,3	42,0	42,9
France	Total	39,9	41,5	41,4	40,6	42,9	42,7	42,8	42,6	43,9	44,3	44,7
	Males	35,9	36,6	36,8	36,1	38,5	38,1	38,6	38,1	39,3	40,0	40,4
	Females	43,8	46,2	46,0	44,9	47,2	47,0	47,0	47,0	48,3	48,4	48,8

* Introduction of the ISCED 2011 classification: data up to 2013 are based on ISCED 1997, as from 2014 ISCED 2011 is applied. Online tables present data for three aggregates (see 3.2 above), and at this level of aggregation data are directly comparable for all available countries except Austria.

Source: Eurostat, Population by educational attainment level, sex and age (%)[edat_lfse_03]

The table above depicts clearly that the proportion of tertiary educated population between 25 and 34 is continuously progressing over the 2005-2015 decade both on EU-level and in the case of France (where this share is higher than the European average).

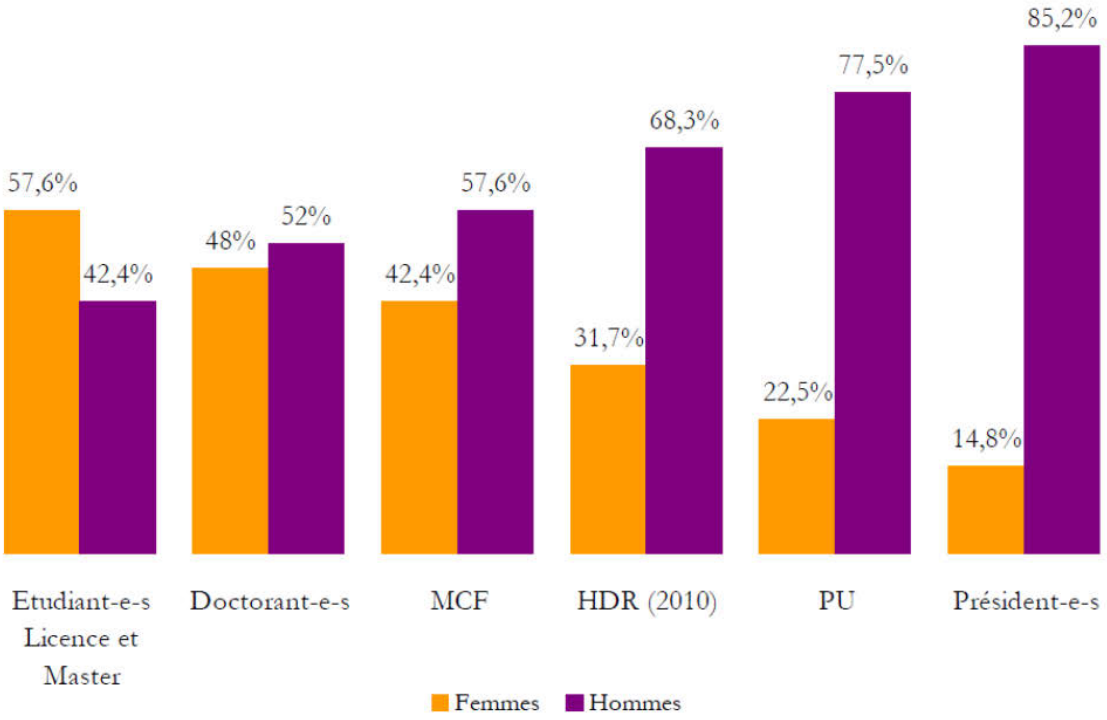
It can be observed also that both on EU-level and in France the proportion concerned is higher in the female population than in its male counterpart.

Recognising the impact that education has on participation in the labour market, occupational mobility and quality of life, policy makers and educators are emphasising the importance of reducing differences in education opportunities and outcomes between men and women. In 2014, an average of 57% of first-time graduates from tertiary education were women in OECD countries, ranging from 49% in Switzerland to 64% in Latvia and the Slovak Republic. In addition, more than one in two first-time graduates from all levels of tertiary education – except the doctoral level – were women. On average, 58% of first-time graduates from bachelor's programmes or the equivalent were women, as were 47% of doctoral-level graduates.

Although most tertiary graduates in 2014 were women, men still have better labour market outcomes. Earnings for tertiary-educated men are higher, on average, than those for tertiary-educated women, and tertiary-educated men tend to have higher employment rates than women with the same level of education (Indicators A5 and A6). (Education at a Glance 2016, p63)

In the case of France, the figure below provides some striking information depicting an inversion of respective shares of women and men when comparing bachelor and master students on the one side and PhD students on the other side. This tendency becomes stronger and stronger when it comes to the further stages of the "academic ladder", i.e. from associated professors to university presidents.

Figure 6: Gender distribution of master and PhD students in 2011



From left to right the categories are : students, PhD students, associate professors, associate professors with a PhD habilitation, professors, university presidents.

Source : MESR (2013a p.3)

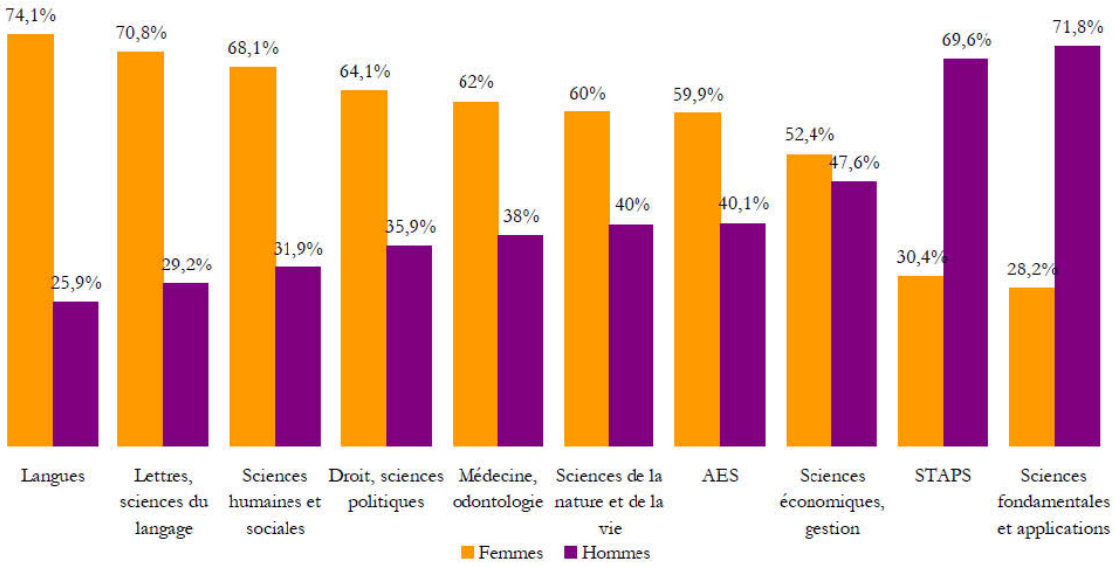
3.2.2 Gender ratio for all tertiary graduates, by field of education

Some fields of study have an imbalanced gender distribution all over industrialized countries. OECD figures show that even if women are over-represented among tertiary graduates (57% of first-time graduates), they remain under-represented in certain fields of study, such as science and engineering. For instance, in OECD countries, there are, on average, three times more male graduates in engineering than female graduates. Similar observations can be made for France.

If one considers the specificities of the French higher education system, in particular the existence of different institutional nature and status of higher education establishments, a very clear opposition can be observed. The share of women decreases with the degree of "technicality" of the institution. Women are in majority in universities (providing the most classical framework in terms of discipline), the ratio between men and women is equal to one in the case of business schools in there are three times more men than women in engineering schools.

The unbalanced gender distribution is extremely strong when considering the disciplines as shown in the next figure. On the one end of the spectrum (i.e. humanities and social sciences) there are three times more female than male students and this 1 to 3 proportion is inverted at the other end of the spectrum (i.e. natural sciences and engineering). One may observe a roughly equilibrated distribution only in fields such as economics and management (see next figure).

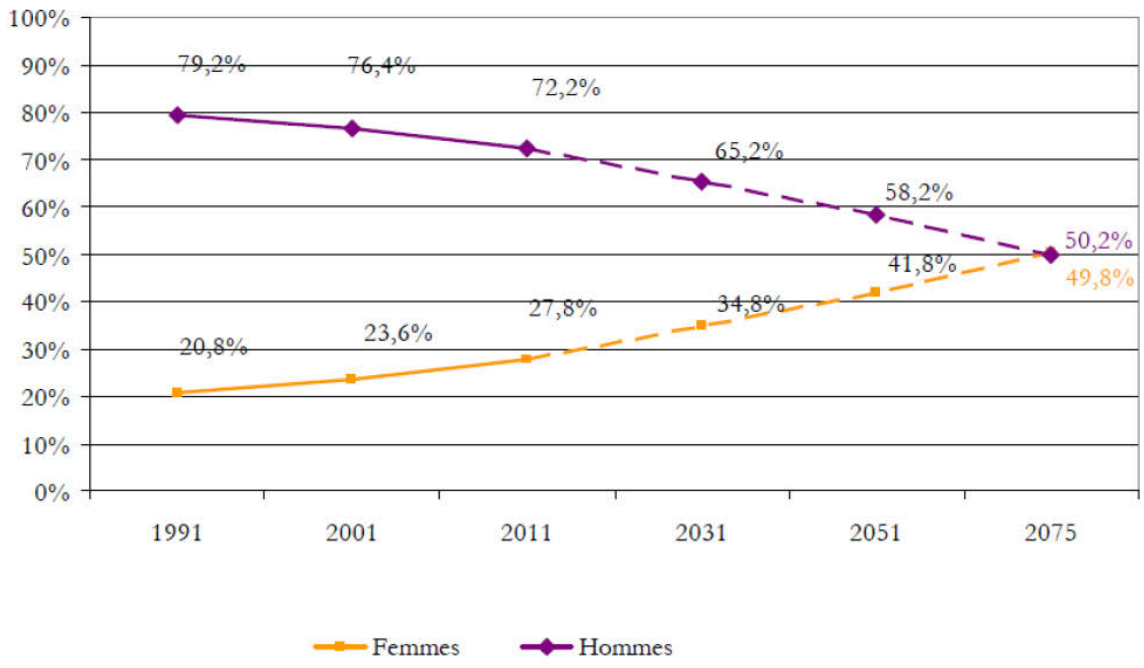
Figure 7: Gender distribution according to academic fields in 2011



Source: MESR (2013a, p. 5)

Concerning the strong underrepresentation of female students in the field of engineering, the French Ministry for Research and Higher Education provided in 2013 – not without a certain sense of humour – a calculation based on the 1991-2001-2011 observable trend. As a result of this trend projection (see next figure), gender equilibria in French engineering schools should be reached … in 2075!

Figure 8: Predicted evolution of the share of female and male students in engineering schools



Source: MESR (2013a, p. 6)

3.2.3 Development of the number and proportion of women ISCED 6 graduates differentiated by field of study

The two tables below fully confirm the previous observations, revealing nevertheless that the situation in France is in this respect very similar to the rest of the European Union (when average figures are considered). The figures are particularly striking when it comes to fields such as computing or engineering, both for France and EU 27.

Table 25: Development of the proportion of women ISCED 6 graduates differentiated by field of study

		Education	Humanities & arts	Social sciences, business and law	Science, mathematics and computing	Engineering, manufacturing and construction	Agriculture and veterinary	Health and welfare	Services
EU 27	2006	64	52	47	41	25	51	54	
	2010	64	54	49	40	26	52	56	
	2012	64	54	51	42	28	57	59	45
France	2006	59	54	48	37	27	65	46	
	2010	55	58	46	39	27	54	47	
	2012	56	58	48	39	31	-	47	38

Source: SHE Figures 2015, p.26 (data for 2012); SHE Figures 2012, p.79 (data for 2010, calculations JR); SHE Figures 2009, p.51 (data for 2006)[28]

Table 26: Development of the proportion of women ISCED 6 graduates differentiated by narrow fields of study in the natural sciences and engineering

		Life Science	Physical Science	Mathematics and Statistics	Computing	Engineering and Engineering Trades	Manufacturing and Processing	Architecture and Building
EU 27	2004	53	34	31	18	19	30	36
	2010	57	34	32	19	23	42	34
	2012	58	37	36	21	25	35	38
France	2004	50	31	24	18	27	63	32
	2010	55	34	24	22	24	49	39
	2012	56	34	24	19	26	55	37

Source: SHE Figures 2015, p.31 (data for 2004 and 2012); SHE Figures 2012, p.80 (data for 2010, calculations JR)

[28] https://ec.europa.eu/research/science-society/document_library/pdf_06/she_figures_2009_en.pdf

3.3 Labour Market Participation of women and men in the RTDI (whole sector)

3.3.1 General Labour market participation

For the sake of the present study, the participation of men and women to the French labour market can be grasped in particular along three dimensions:

- the impact of parenthood by sex;
- the proportion of part-time employees by sex; and
- the proportion of "knowledge workers" (employment in science, knowledge-intensive activities, etc.) by sex.

The general picture (see the following tables) is that the situation in France is – depending on the observed variables – slightly better if not better than on the average of the countries considered for comparison (OECD or EU depending on the available data).

An important reason for the different labour market behaviour of men and women is of course the different impact of parenthood. Whereas men with children tend to work more than men without children, the opposite is true for women: women without children have higher employment rates than women with children. The different impact is illustrated in Figure 2, which compares the difference in employment rates of men and women without the presence of any children and with the presence of a child aged 0-6 within the age group 20-49. It appears that all countries indicate the same pattern: the impact of parenthood is positive for men (translating into a negative score) but negative for women (translating in a positive score, see next tables).

Table 27. Employment impact of parenthood (age 20-49)

	Males	Females
OECD Average	-11,3	10
France	-12,4	2,3

Source: Eurostat 2014; Plantenga 2014, p40

Table 28: Employment rates in the total population aged 20-64, by sex and gender gap[29]

		.2014	2015
EU28	Males	75,0	75,9
	Females	63,5	64,3
	Gender Gap	11,5	11,6
France	Males	73,3	73,2
	Females	65,7	66,0
	Gender Gap	7,6	7,2

Source: Eurostat, LFS http://ec.europa.eu/eurostat/de/data/database

[29] This means the difference of employment rates between women and men. It is calculated by subtracting the employment rate for women form those of men.

Table 29 : Employment Rate of Persons Aged 25-49 by Age of Youngest Child by Sex

			2005	2006	2007	2008	2009	2010	2011	2012	2013
France	Female	Child aged under 3	59,5	58,1	60,5	62,6	61	62,1	61,6	61,7	62,7
		Child aged 3-5	71,3	73,2	73,7	76,5	75,5	74,6	74,7	75,4	73,7
		Child aged 6-16	77,3	78	79,8	80,8	81,6	80,9	80,7	80,6	80,4
	Male	Child aged under 3	90,6	91,2	91,7	92,2	91	89,9	90	88,4	87,5
		Child aged 3-5	92,2	92,3	92,2	93	92,1	91,8	91,5	91,4	89,7
		Child aged 6-16	92,9	93	93,1	94,4	92,7	93	93	92,3	91,3

Sources: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy

Table 30: Employment Rate of Persons Aged 25-49 without children by Sex

		2005	2006	2007	2008	2009	2010	2011	2012	2013
France	Female	81,6	82,7	84	84,7	82,9	82,8	82,4	81,3	82
	Male	85	85,3	86,1	87,1	84,9	84,8	84,6	83,6	82,6

Sources: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy

Table 31 : Full-time equivalent (FTE) employment rates among women and men aged 20-64 (%) and gender gap (percentage points), 2010-2014

		2010	2014
EU28	Males	73,1	72,7
	Females	53,5	54,5
	Gender Gap	19,6	18,2
France	Males	72,3	71,9
	Females	57,9	59,1
	Gender Gap	14,4	12,8

Source: EC 2016, Report on equality between women and men, p.49[30]

[30] http://ec.europa.eu/justice/gender-equality/files/annual_reports/2016_annual_report_2015_web_en.pdf

Table 32: Proportion of scientists and engineers in the active population between 15 and 74 years, by sex and year

GEO	SEX/TIME	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	4,9	4,9	5,0	6,4	6,5	6,6	6,6	6,8
	Males	6,0	6,1	6,2	7,3	7,2	7,3	7,4	7,5
	Females	3,5	3,5	3,6	5,5	5,5	5,7	5,8	6,0
France	Total	5,4	5,4	5,5	6,4	6,8	6,4	5,8	5,8
	Males	7,5	7,4	7,7	7,8	8,0	7,3	6,5	6,6
	Females	3,0	3,2	3,0	4,9	5,4	5,4	5,1	4,9

Source: Eurostat, HRST by category, sex and age [hrst_st_ncat]

Table 33: Annual data on employment in knowledge-intensive activities (KIA) as a percentage of total employment at the national level, by sex (from 2008 onwards, NACE Rev. 2)

GEO	SEX/TIME	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	34,2	35,0	35,4	35,6	35,7	35,8	35,9	36,0
	Males	27,2	28,0	28,5	28,7	28,8	28,9	29,1	29,1
	Females	42,7	43,5	43,8	43,8	43,9	43,9	44,0	44,2
France	Total	38,8	39,3	39,0	39,3	39,4	39,0	39,4	39,5
	Males	31,4	31,7	32,0	32,6	32,5	32,1	32,8	32,8
	Females	46,9	47,6	46,7	46,8	47,0	46,4	46,5	46,7

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

Table 34: Employment in knowledge intensive activities – business activities (KIABI) by sex

GEO	SEX/TIME	2008	2009	2010	2011	2012	2013	2014	2015
EU28	Total	13,2	13,4	13,5	13,7	13,8	13,8	13,9	14,0
	Males	13,3	13,6	13,9	14,1	14,2	14,4	14,5	14,6
	Females	13,1	13,2	13,1	13,2	13,3	13,2	13,3	13,4
France	Total	13,5	13,8	13,8	14,4	14,3	14,0	14,0	14,3
	Males	13,6	14,1	14,3	14,7	14,7	14,6	14,7	15,1
	Females	13,3	13,5	13,1	14,0	13,8	13,3	13,2	13,4

Source: Eurostat, employment in knowledge intensive activities [htec_kia_emp2]

3.3.2 Participation of women and men in RTDI

In the next table, absolute numbers related to the participation of women and men in RTDI activities are displayed for the period 2010-2013. The three main sectors of French R&D are displayed: the private sector (BES), the higher education sector (HES) and the governmental (outside universities, e.g. CNRS) sector.

Table 35 : Researchers differentiated by R&D sectors and by sex (in full time equivalents)

TIME	FRANCE	BES	HES	GOV
2010	Total	143.828	70.295	26.611
	Females	28.580	7.088	9.146
	Males	115.248	63.207	17.465
2011	Total	148.439	71.170	26.808
	Females	29.917	24.381	9.318
	Males	118.522	46.789	17.490
2012	Total	156.392	71.890	27.413
	Females	31.700	24.678	9.557
	Males	124.692	47.212	17.856
2013	Total	161.882	72.749	28.227
	Females	33.158	24.676	10.161
	Males	128.724	48.073	18.066

Source: Eurostat

In 2012, one public researcher out of three is a woman; one in five in private businesses. The ratios between men and women in research vary according to scientific research domains. As in higher education, there are more women in medicine and agronomy than in aerospace and digital technologies. At INSERM, Institut Pasteur and INRA, women are as often part of research teams as men. At ONERA (aerospace) and INRIA (ITs), women represent respectively 16% and 20% of the researchers. A similar situation is observable in companies. In the Pharmaceutical and Chemical sectors, women account to 57% and 47% of researchers, respectively. On the other hand, women are poorly represented in the 'aircraft and spacecraft' (16%), the 'automobile' (13%) and "Manufacture of machinery and equipment" (8%). In the past three branches, the share of women, however, is higher among researchers and support staff.

3.4 Horizontal segregation

3.4.1 General horizontal Segregation

The data presented below show that clear gender segregation is to be observed in France. Nevertheless, the level of gender segregation is comparable to what can be found EU-wide. In this respect no significant French specificities can be identified.

Table 36: Gender segregation in occupations and in economic sectors, 2004 vs 2014

	Gender segregation in occupations (%)		Gender segregation in sectors (%)	
	2004	**2014**	**2004**	**2014**
EU 28	24,7	24,4	17,7	18,9
France	26,5	26,1	17,1	18,8

Source: EC 2015, Country Report Gender Equality: p.52

This index reflects the proportion of the employed population that would need to change occupations/sectors in order to bring about an even distribution of men and women across occupations or sectors. The index varies between 0 (no segregation) and 50 (complete segregation). In France, the gender segregation in occupations is slightly higher than the EU-average and close to it when it comes to segregation in sectors.

Table 37: Employment by Occupation, Sex, Measurement, Country and Year

FRANCE		2004	2014
Legislators, senior officials and managers	Female	35,9	32,7
	Male	64,1	67,3
Professionals	Female	43,5	51
	Male	56,5	49
Technicians and associate professionals	Female	49,6	48,3
	Male	50,4	51,7
Clerks	Female	76,5	76,4
	Male	23,5	23,6
Service workers and shop and market sales workers	Female	72,9	66,5
	Male	27,1	33,5
Skilled agricultural and fishery workers	Female	29	22,8
	Male	71	77,2
Craft and related trade workers	Female	8,8	10,3
	Male	91,2	89,7
Plant and machine operators and assemblers	Female	19,6	19,5
	Male	80,4	80,5
Elementary occupations	Female	63,5	65,9
	Male	36,5	34,1
Armed forces	Female	..	15
	Male	92,7	85

Source: UNECE Statistical Database: http://w3.unece.org/PXWeb2015/pxweb/en/STAT/STAT__30-GE__03-WorkAndeconomy/004_en_GEWEEmplSCO88SPN_r.px/?rxid=144ff3cd-f9b5-4e36-a865-47609264ae8f

Employment by occupation and sex reveals clear structural differences in the case of France. Men are strongly overrepresented in armed forces or agricultural activities whereas women tend to be clerks or service workers for instance. This unbalanced seems to be extremely stable over time since for almost all categories only very marginal changes can be observed between 2004 and 2014.

3.4.2 Distribution of researchers in the Higher Education Sector (HES), across fields of science, 2012

The gender distribution of researchers across scientific fields is to a certain extent comparable to the one concerning students (cf. section 3.2.2). The broad picture is that women are strongly overrepresented in literature and totally underrepresented in engineering. Nevertheless, some differences can be highlighted. The first one concerns life sciences where the gender imbalance is less strong for researcher than for students (women are even overrepresented in the field of pharmaceutical research). The second one concerns economics and management (and to a certain extent law and political sciences); in these fields, women are less present than men, even if there is balance in the case of students. One hypothesis possibly explaining these observations is that - since nothing is said about the average size of the teacher and researcher teams for each field - women are more present when research teams are bigger (in lower positions) like in pharmaceutical research and less present when it comes to disciplinary smaller teams (e.g. economics) where the spread of status is lower.

According to one of the expert (interviewed the 21/02/2017), an interesting observation can be made in terms of research fields and gender equality. Over the last decades, when a new research field is emerging (she gave the example of geophysics several years ago) during a first stage not only few researchers (mainly PhD students and post-docs) are investigating the (sub)field concerned … and the proportion of men and women is roughly the same. As the importance of the research (sub)field is growing (and the number of researchers increases), the proportion of female students and researcher decreases. They appear to be seen as “less competitive” when things become more important.

3.5 Vertical Segregation

3.5.1 General vertical segregation

The level of general vertical segregation in France is comparable to the one observable on average in EU with some slight variations (see next table). For instance, in France the share of female members of parliament is lower than the EU average, whereas the share of female members of regional assemblies is significantly higher.

Table 38: Share of male and female members of boards in largest quoted companies, supervisory board or board of directors, in 2012

	share of female ministers	share of female members of parliament	share of female members of regional Assemblies	share of female members of boards, in largest quoted companies, supervisory boards or board of directors	share of female members of central bank
EU	**22**	**25**	**31**	**16**	**17**
France	24	20	48	25	18

Source: EIGE gender equality index 2015, page 173[31]

3.5.2 Vertical segregation in RTDI

Regarding vertical segregation in RTDI, the picture is again very similar to the European average (see next table): the lower the grade, the higher the proportion of women and no strong changes can be observed between 2007 and 2013.

Table 39: Proportion of women academic staff, by grade and total

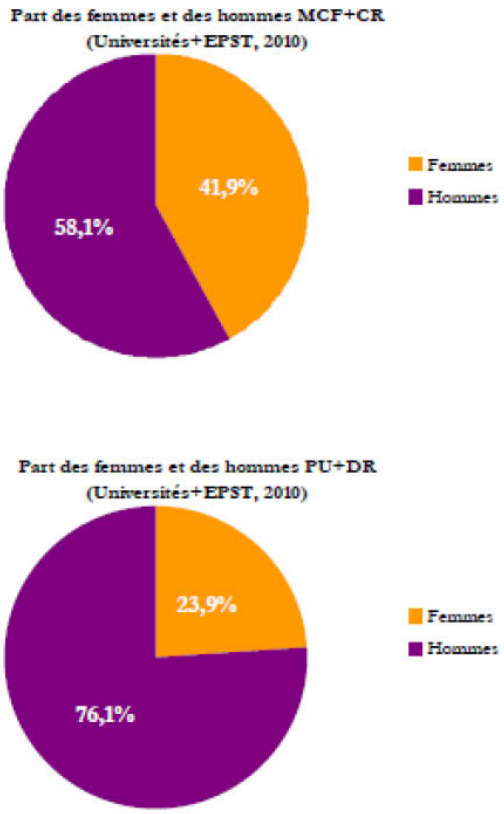
		Grade A	Grade B	Grade C	Grade D	Total
EU 27	2007	19	36	44	44	38
	2010	20	37	44	46	40
EU 28	2013	21	37	45	47	41
France	2007	19	39	34	42	35
	2010	19	40	30	42	34
	2013	19	40	30	41	34

Source: She Figures 2015, p.129 (data only for 2013); She Figures 2012, p90 (data for 2010); She Figures 2009, p75 (data for 2007)

If one focusses on the specific grades of French civil servants teaching and making research in universities and similar institutions, it appears clearly that if women are counting for ca. 42 % of all associated professors (and similar status), the share of women being full professors (or research directors, a similar status) is only 24 % (data for 2010, see next figure).

[31] http://eige.europa.eu/sites/default/files/documents/mh0415169enn.pdf

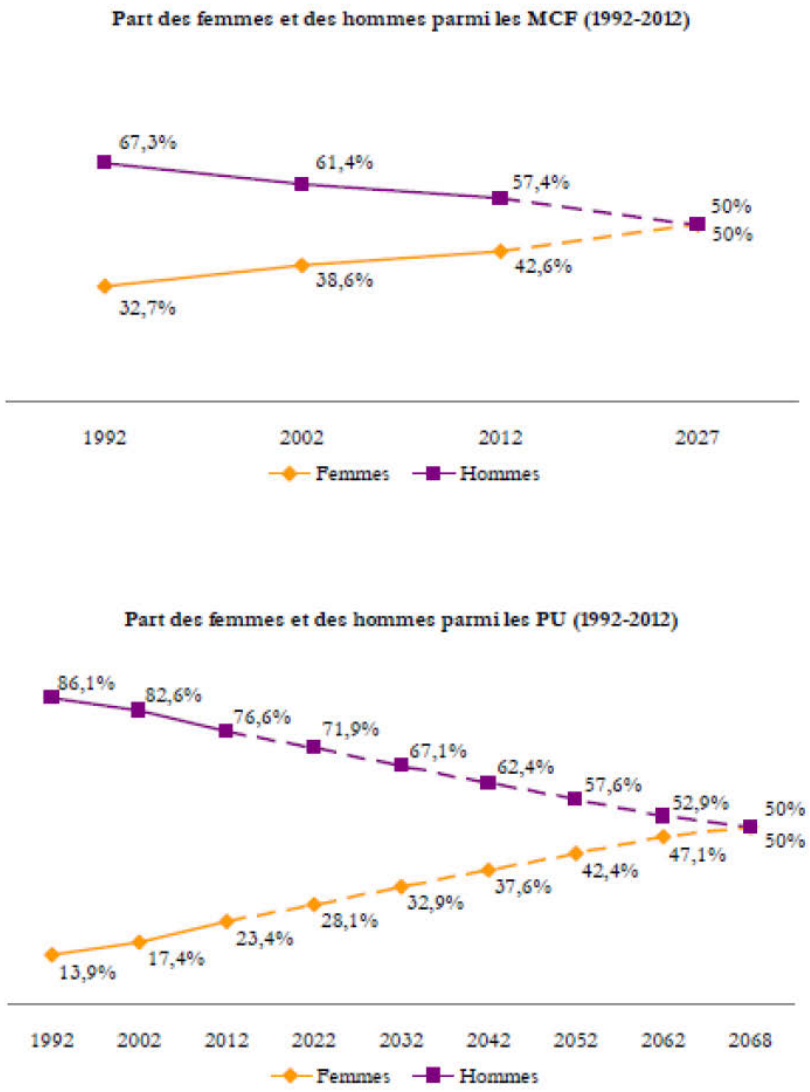
Figure 9: Gender distribution of associated and full professors (and similar grades) in 2010



Source: MESR (2013a, p. 8)

As a consequence - and if nothing changes – projections based on the 1992 -2012 evolution show that gender parity should be reached for associated professors in 2027, whereas for full professors, one should wait … until 2068 (see next figure). Of course, these figures do not pretend to correspond to a real statistical projection in terms of trend. Nevertheless, it is interesting to observe that they appear – as a humoristic provocation – in an official document.

Figure 10: Predicted evolution of the share of female and male associated and full professors until equilibria



Source : MESR (2013a, p. 9)

3.6 Employment conditions/status/contracts

3.6.1 General working time culture

The number of hours worked per week influences work-life balance, which in turn has an effect on subjective well-being. However, this effect is not linear. Research has shown that subjective well-being increases with the number of hours an individual works per week but only up to a certain point, beyond which it starts to deteriorate, possibly because excessive (over 48 per week) working hours reduce job satisfaction which in turn reduces overall fulfilment (Abdallah, Stoll and Eiffe, 2013).

In the case of France, if we compare the evolution of weekly working hours (of full-time workers) over the period 2005-2015 with the European average, it appears clearly that from the beginning of this period the amount of working hours is roughly two hours less in France than on EU average. Within ten years, the amount of working hours declined by approximately one hour both in France and in the rest of Europe. Interestingly, it can be observed that women benefited less than men from

this decrease when considering EU 28. In the case of France, things are even more noticeable since women did almost not benefit at all from this evolution (minus 20 minutes over 10 years vs. minus one hour for men). So far, no explanation to this phenomenon seems available.

Table 40: Actual weekly working hours of full-time workers by gender and country

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	women	39,4	39,2	39,2	39,1	38,9	39,1	39,1	39,0	38,9	38,9	38,9
	Men	42,5	42,3	42,3	42,1	41,7	41,9	41,9	41,7	41,6	41,5	41,5
	Total	41,4	41,2	41,2	41,0	40,7	40,8	40,8	40,7	40,6	40,5	40,5
France	women	37,6	37,7	37,6	37,7	37,5	38,0	38,0	37,9	37,2	37,2	37,3
	Men	40,9	40,9	40,8	40,7	40,6	40,9	41,0	40,7	40,0	39,8	39,9
	Total	39,6	39,6	39,6	39,5	39,4	39,8	39,8	39,6	38,9	38,8	38,8

Source: Eurostat, Average number of actual weekly hours of full-time work, http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.doc

3.6.2 Working time in RTDI

A similar, and even more marked, evolution can be observed when considering working time in RTDI (cf. next table). In fact, the overall trend is the same at the exception that it is much stronger. As a result, the working week decreased on average for academics in France by one hour over the 2005-2015 period, meaning than men work two hours less than previously and women one hour more.

Table 41: Actual weekly working hours of full-time employed persons in academic professions by gender and country

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU28	women	38,0	38,0	38,2	38,2	38,1	38,3	38,1	38,2	38,2	38,3	38,3
	men	42,3	42,0	42,0	41,8	41,6	41,6	41,7	41,7	41,4	41,2	41,2
	total	40,4	40,3	40,4	40,2	40,1	40,2	40,1	40,1	40,0	39,9	39,8
France	women	36,4	36,4	37,2	37,6	38,0	38,2	38,5	38,3	37,6	37,8	37,8
	men	42,4	42,3	42,3	42,2	42,4	42,4	42,5	42,5	41,0	40,5	40,8
	total	40,2	40,1	40,4	40,4	40,7	40,8	40,9	40,8	39,6	39,3	39,4

Source: Eurostat

http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.doc

Table 42: Part-time employment of researchers in the higher education sector out of total researcher population, by sex 2012

	Men	Women
EU 28	8,5	13,5
France	2,4	10,6

Sources: SHE Figures 2015, p102

In the case of CNRS detailed and precise figures are available (CNRS, 2015, p. 167). 86,4% of CNRS employees who work part-time are women. Most of them adopted a 20% work time reduction.

If one looks at the proportion of CNRS employees (i.e. researchers, engineers and technicians) it appears that 16% of all female employees are working part time. For male employees, this proportion is 2%.

An interview (27/02/2017) revealed clearly that not only in the case of CNRS but for the entire academic world in France, part-time employment clearly hinders career of women. One of the explanations is that at some point of such a career a crucial overinvestment of individuals is required. This is necessary for instance in order to create and develop research networks, gaining funds or engaging in international mobility. For most part-time researchers (who are quasi-exclusively women), such efforts cannot be produced and careers are slowed down.

3.6.3 Working contracts in RTDI

3.6.3.1 Fixed-term contracts vs. permanent positions/contracts

The proportion of "precarious" researchers in France is significantly lower in France than on EU average. Nevertheless there is strong "safety" gap: women are two time more (in proportion) affected by precarious contracts than men (see next Table). The nature of precarious contracts can be very heterogeneous, but it seems quite clear that in a system like the French RTDI one where most researchers have the status of well-protected civil servants, precarious contracts are not only less "safe" but only synonyms of less paid an les prestigious jobs.

Table 43: "Precarious" working contracts of researchers in the higher education sector out of total researcher population, by sex, 2012

	Men	Women
EU 28	7,3	10,8
France	2,9	5,7

Sources: SHE Figures 2015, p104, figure 5.2

3.6.3.2 Career opportunities

Even the beginning of the career (i.e. once a PhD is gained) reveals an imbalance (cf. interview dated 27/02/2017). Female doctors are hired as associate professors after a longer period of time than their male counterparts. This difference is also marked when it comes to international mobility (for instance in the case of post-docs). Basically, the propensity of the spouse to follow his or her partner abroad is not the same for men and women.

A more general observation is that the imbalance in terms of disciplines that was underlined above (cf. section 3.2.2) impacts strongly career opportunities within and beside academia.[32] A journalist (Olivier Rollot) working for the most well-known French newspaper (Le Monde) states in his blog that inequalities such as pay gap are reinforced from the beginning of one's professional career. Put it simply, a male engineer will not only earn more in average than a former female human sciences student, he will also easier find a job better paid than the one of his female counterpart.

[32] http://orientation.blog.lemonde.fr/2016/09/19/quelle-place-pour-les-femmes-dans-lenseignementsuperieur/

3.7 Gender Pay Gap

3.7.1 General Gender Pay gap

The gender pay gap is the difference between average gross hourly earnings of male and female paid employees, expressed as a percentage of the former. The situation in France is marginally better than the one that can be observed on average in the EU.

Table 44: Gender Pay Gap by country

GEO/TIME	2007	2008	2009	2010	2011	2012	2013	2014
EU28	:	:	:	16,1	16,5	16,6	16,4	16,1
France	17,3	16,9	15,2	15,6	15,6	15,4	15,3	15,3

Source: Eurostat, Structure of Earnings Survey [earn_gr_gpgr2][33] und Report on equality 2015, http://ec.europa.eu/justice/gender-equality/files/annual_reports/2016_annual_report_2015_web_en.pdf, page 51

Further sources (MFEDF 2016, p. 19) indicate that the gender pay gap is generalised across the whole economy. Interestingly it appears to be much stronger for employees over 50 but also growing with the size of companies.

3.7.2 Gender Pay Gap in RTDI

Table 45: Gender pay gap (%) in the economic activity "Scientific research & development" and in the total economy, 2010

	Scientific research and development services	Total economy
EU 28	17,9	16,6
France	15,6	15,6

Source: SHE Figures 2015, p. 109 (for 2010 only)

[33] The unadjusted gender pay gap (GPG) represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees. The GPG is calculated on the basis of:

- the four-yearly Structure of Earnings Survey (SES) 2002, 2006, 2010, etc., and with the scope as required by the SES regulation,

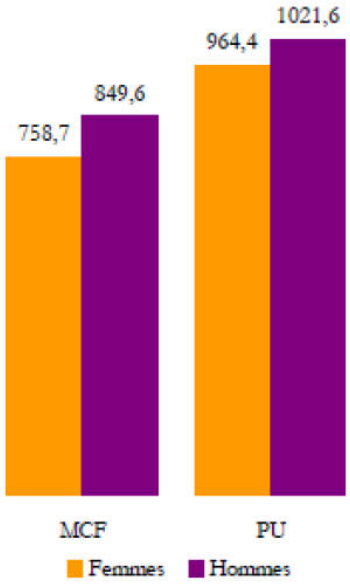
- national estimates based on national sources for the years between the SES years, from reference year 2007 onwards, with the same coverage as the SES.

Data are broken down by economic activity (Statistical Classification of Economic Activities in the European Community - NACE), economic control (public/private) of the enterprise as well as working time (full-time/part-time) and age (six age groups) of employees. Data are released in February/March on the basis of information provided by national statistical institutes.

From on overall point of view (see next table) the gender pay gap is smaller in France than an EU average, especially in RTDI activities. At the same time (and at the difference to what can be observed for EU 28) there is no difference between RTDI and the total economy.

Nevertheless, if one focuses on the gender pay gap of associated and full professors, the following figure reveals clearly its existence and at the same time that it is proportionally bigger in the case of associated professors (the numbers indicated refer to the specific French civil servants remuneration "points" that evolve in time and not in Euros).

Figure 11: Gender pay gap for associated and full professors in 2011



Source : MESR (2013a, p. 11)

3.7.3 Gender Gap in Scientific Outputs

When compared to the other countries under review, France displays a very similar profile in terms of scientific outputs' gender gaps see the 3 next tables). Shortly summarised, it can be stated that:

- An extremely significant gender gap in terms of scientific outputs can be observed, both in France and in the other countries.
- The situation in France in this respect seems nor better nor worse than in most EU countries. It seems to improve over time, but only at a very slow pace.
- In terms of scientific fields, the differences observed previously are clearly confirmed(i.e. strong underrepresentation of women in fields such as engineering and strong overrepresentation in fields such as humanities).

Table 46: Proportion of publications written by women as main author

Share of women	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	22%	23%	23%	24%	24%	25%	26%	26%	27%	27%
Denmark	25%	26%	27%	28%	28%	29%	30%	31%	31%	31%
France	28%	29%	29%	30%	30%	31%	31%	32%	32%	32%
Germany	20%	20%	21%	22%	22%	23%	24%	24%	25%	26%
Hungary	37%	35%	38%	40%	40%	40%	40%	40%	40%	42%
Spain	33%	34%	34%	35%	35%	36%	36%	37%	37%	37%
Sweden	29%	30%	32%	32%	32%	33%	34%	34%	34%	35%

Source: Scopus, calculations by Fraunhofer ISI

Table 47: Women to men ratio of scientific authorship (when acting as corresponding author), by field of science, 2007-2009 and 2011-2013

		Natural sciences	Engineering and technology	Medical sciences	Agricultural sciences	Social sciences	Humanities
EU 28	2007-09	0,3	0,2	0,5	0,6	0,5	0,6
	2011-13	0,3	0,3	0,5	0,7	0,6	0,6
France	2007-09	0,3	0,2	0,4	0,6	0,5	0,7
	2011-13	0,3	0,3	0,5	0,6	0,6	0,6

Source: SHE Figures 2015, p. 155

Parity between women and men = 1

Table 48: Proportion of patents filed by women

Share of women	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	3%	5%	5%	5%	5%	4%	5%	5%	5%	6%
Denmark	8%	7%	7%	8%	7%	6%	7%	8%	7%	8%
France	10%	10%	11%	11%	11%	11%	11%	11%	12%	11%
Germany	5%	5%	5%	6%	6%	6%	6%	6%	6%	6%
Hungary	14%	13%	11%	8%	11%	9%	8%	9%	16%	1%
Spain	15%	13%	14%	17%	16%	16%	15%	16%	16%	14%
Sweden	8%	8%	8%	7%	7%	7%	7%	7%	7%	4%

Source: Patstat, calculations by Fraunhofer ISI

3.8 Sex differences in international mobility of researchers

The two next tables reveal strong and significant differences between France and the EU average related to the mobility of women during and after their PhD. These observations are coherent with

the phenomenon depicted by one of the experts interrogated (interview dated 27/02/2017, cf. section 3.6.3.2). French young female researchers tend to be hindered in terms of international mobility and it is more than plausible that this impacts negatively the rest of their careers, notably due to a less developed (international) network.

Table 49: International mobility rates of HES researchers during their PhD, by sex and sex difference 2012

	Women	Men	sex difference
EU 27	17,6	18,9	1,3
France	8,3	23,7	15,4

Source: She Figures 2015, p.106 and 124 (based on More2):

The sex difference is calculated by subtracting the share of internationally mobile women researchers from the share of internationally mobile men researchers.

Table 50: International mobility rates of HES researchers in post-PhD careers, by sex and sex difference 2012

	Women	Men	sex difference
EU 28	25,1	34,2	9
France	19,9	29,9	10

Source: She Figures 2015, p.107 & 125

3.9 Women in decision making positions in RTDI

3.9.1 Glass Ceiling Index

Table 51: Glass Ceiling Index

	2004	2007	2010	2013
EU 27	2	1,8	1,8*	1,8*
France	1,8	1,8	1,8	1,7

* Data for EU 28

Source: She Figures 2015, p.136; She Figures 2012, p.96; She Figures 2009, p.78

The GCI compares the proportion of women in grade A positions to the proportion of women in academia. A GCI of 1 indicates that there is no difference between women and men being promoted. A score of less than 1 means that women are over-represented at grade A level and a GCI score of more than 1 points towards a Glass Ceiling Effect.

The French GCI is at the same time extremely high and almost identical to the European average. The effects of glass ceiling are illustrated in the next sections.

3.9.2 Proportion of women heads of institutions in the higher education sector

Table 52: Proportion of women heads of institution in the higher education sector

	2007	2010	2014
EU 27	13	16	20*
France	-	7	10

* Data for EU 28

Source: She Figures 2015, p.141; She Figures 2012, p.115; She Figures 2009, p.97

The last election of universities' presidents in France (2016) confirmed the fact that women are extremely rare in France as heads of higher education institutions. Olivier Rollot points that behind this matter of fact a crucial element is often ignored.[34] The problem is less that not enough women are objectively able (due to a supposed lack of experience) to lead such institutions than the fact that such experiences cannot be acquired without being part of "breeding pools" in which they may develop the necessary competences. In other words, the problem is not only that the "power ladder" is more difficult for women to climb on, but that quite often the access to the ladder does not really exist for them since they are even de facto underrepresented in the less prestigious (informal) groups from which the future deciders may be progressively selected for more demanding responsibilities (cf. interview dated 16/03/2017).

3.9.3 Proportion of women on boards, members and leaders

Table 53: Proportion of women on boards, members and leaders

	2007	2010	2014	
			Members	Leaders
EU 27	22	36	28*	22*
France	27	27	-	-
Germany	20	21	25	8
Hungary	19	19	23	24
Spain	-	34	32	63
Sweden	49	49	55	44

* Data for EU 28

Source: She Figures 2015, p.143 (data only for 2014); She Figures 2012, p.117; She Figures 2009, p.98

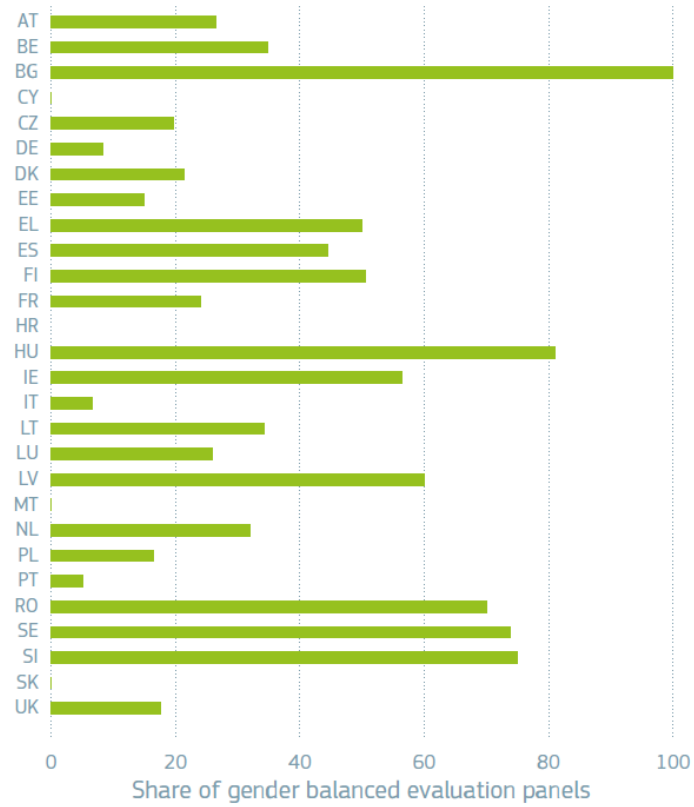
The figures presented in the table above are perfectly consistent with the ones displayed in the previous section. The proportion of women who are elected presidents of universities varies between approximately 15 and 20 % during the 2004 -2012 period.

[34] http://orientation.blog.lemonde.fr/2016/09/19/quelle-place-pour-les-femmes-dans-lenseignementsuperieur/

3.9.4 Percentage of research evaluation panels in RFOs that included at least 40% of target of under-representated sex in boards.

The share of gender-balanced research evaluation panels amongst responding research funding organisations in France is lower than the EU average. France: 24,1%; EU 35,8% (ERA Facts and Figures France 2014, p. 283)

Graph 22: Share of gender-balanced research evaluation panels in funders, 2013
Source: ERA survey 2014



Source: ERA Facts and Figures 2014, p. 32: http://ec.europa.eu/research/era/eraprogress_en.htm

An interesting observation was formulated recently, during an interview to the newspaper Le Monde, by Isabelle Kraus (the President of the permanent conference for equality in universities).[35] According to her, the system tends to "push" associated professors after 10 years towards full professorships allowing them to devote more time to research and less to teaching. In the case of female researchers, it is unconsciously assumed that they find a higher degree of self-realisation in teaching than in performing research, which clearly tends to slow down their career since excellence in research is a criterion more important than excellence in teaching. One of the "logical" consequences is that women become less represented in research evaluation panels and more generally in every type of decisions boards.

[35] http://www.lemonde.fr/campus/article/2016/09/14/les-moyens-manquent-pour-mettre-en-uvre-la-parite-a-l-universite_4997549_4401467.html

3.10 Inclusion of gender in research and teaching

The figures available (see the two next tables) show a contrasted picture related to the inclusion of gender in research and teaching. Basically, efforts were made and the trend is positive. Nevertheless, especially when it comes to the funding of gender research, figures are extremely low in comparison to front-runners countries (such as Germany or Austria for instance).

One of the interviews (dated 27/02/2017) tends to prove that French academic authorities became stronger convinced over the importance of this research and teaching field and that the situation in France evolves positively, but only slowly.

Table 54: Support to the inclusion of gender contents in research agendas by funders (%)

	frequently	occasionally	none	not applicable	no answer
Austria	40,2	53,5	1,9	4	0,4
Denmark	0	0	67,1	32,9	0
France	0	5,9	93,8	0,2	0
Germany	24,6	74,6	0	0,7	0
Hungary	0	0	100	0	0
Spain	1,7	0,2	83,5	9,7	5
Sweden	16,8	17,5	61,4	4,2	0

Source: EC 2015, ERA facts and figures, p85

Table 55: Inclusion of the gender dimension in research content (%RPO)

	yes	no	not known	not applicable
Austria	69,9	10	7,7	12,4
Denmark	61,1	31,6	7,1	0,1
France	50,8	27,3	6,5	15,4
Germany	62,9	9,5	14,3	13,2
Hungary	11,4	66,8	10,3	11,5
Spain	28,1	41,4	27,7	2,8
Sweden	52,9	18,2	4,1	24,8

Source: EC 2015, ERA facts and figures, p85

A first attempt to identify the different curricula linked to gender issues was provided in 2012 by the expert commission in charge of investigating the state of the art in France (cf. MESR, 2013b).

The main observations formulated in the report are the following:

(a) Some specialized master and PhD programs exist but only a few students can access to a teaching track centered on gender issues.
(b) Teaching on gender is generally sped over different formations which may constitute a weakness in terms of visibility of the field. Nevertheless, the situation is better in large universities.

(c) Gender teaching is less represented at bachelor level, mainly under the form of optional courses.

4 Evaluation Culture and Policy

4.1 Description of Evaluation Culture

4.1.1 Explicit legislation and adoption of evaluation standards

The most significant changes of the research and innovation system are intertwined with the evolution of the legal policy context. The Law of 22 July 2013 mainly deals with public research system changes. The new National Research Strategy (published in March 2015) contains orientations according to which research performers shall alter their research priorities in order to better meet societal challenges, in the context of the European research policy framework.

"The National Research Strategy and the conditions for its implementation are subject to a biennial report of the Parliamentary Office for Evaluation of Scientific and Technological Choices [...], which includes an analysis of the effectiveness of public aid to private research. [...] Multi-year contracts with research organisations and higher education institutions, the programme of the National Research Agency and other public research funding contribute to the implementation of the national strategy for research. The Parliamentary Office for Evaluation of Scientific and Technological [...] contributes to the assessment of the implementation of this strategy."

The national strategies, one for higher education and one for research, are presented by the government to the Parliament every five years, in the form of a White Paper on higher education and research. The preparation of the National Research Strategy is a permanent process, for which a new Council was set up: The Strategic Research Council. (Rio country report –France 2015, p20f)

In July 2012, the French government launched the so-called "Assises" (conference) on Higher Education and Research. The Assises resulted in a report which was eventually used as a basic input for the Law enacted on 22 July 2013. The consultation process involved a wide range of stakeholders. Major French HEIs and PROs contributed to it. Over that consultation period representatives of 106 institutions were auditioned by the National Steering Committee; regional round tables were organised to debate the propositions; more than 3,000 organisations and individuals contributed on the website; finally, on 26 and 27 November, the concluding national round table gathered over 600 people, who debated the propositions that emerged from the regional "round tables". The Law on Higher Education and Research was built on these proposals. (Rio country report –France 2015, p24)

More generally, it must be kept in mind that French evaluations take place in a very specific cultural and political context. The dependence on the ex-ante evaluation tools of the French economist engineers evaluators of large projects, the institutionalization of so-called evaluative practices passing through the bodies of general inspections and control (Court of Auditors), leave little room for the deployment of evaluations based on research in human and social sciences. Monitoring and public program evaluation assumes a public management culture that is still too scarce: the new public management based on a strategic management by objective and crossed with a management based on activities (value chain: inputs-outputs-outcomes or results-impact) is not widespread, with technocratic and bureaucratic functioning continuing to prevail.

The evaluation of program implementation is more widespread than the evaluation of the impact of public policies.[36] Reports are often for internal use and evaluation is not very open. Efficiency assessments are rarely requested. Some monitoring and evaluation tests and embedded evaluation can be highlighted (social experiments by Martin Hirsch)[37] and some outcome assessment projects (for example, the young people's guarantee) are promising but could not be considered as impact (counterfactual) evaluations.[38]

As it is stressed by numerous analysts and reports (see for instance CESE, 2015, pp. 53-55), expectations linked to public evaluations in France are not in phase from the ones associated to evaluations in the US or UK for instance. In France, due to the tradition of a centralised and "protecting" state, the approach was traditionally more attached to the investigation of the "benevolent" impact of public policies than to the efficiency of the investments realised. This last approach may rather characterize a NPM (New Public Management) vision, which historically can be attached to an Anglo-Saxon philosophy. Nevertheless, over the years – and in particular to do evaluations commissioned under behalf of the European Union – the two approaches tend to merge in France.

4.1.2 Budget, Number, frequency and public access to evaluations

A very detailed online platform launched by the government gives information over all (current and achieved) evaluations of public policies since 2013. It is part of the portal devoted to more transparency of the public action called "*Le portail de la modernisation de l'action publique*".[39] This constitutes a real progress since public access to reports and figures does not historically belong to the French administrative culture.

In particular, this site indicates in which stage of the process of evaluation each program is according to the following stages (cf. next figure):

- Decision of launching
- Framing of the process
- Diagnostic
- Scenarios developed
- Report
- Decision taking
- Action plan

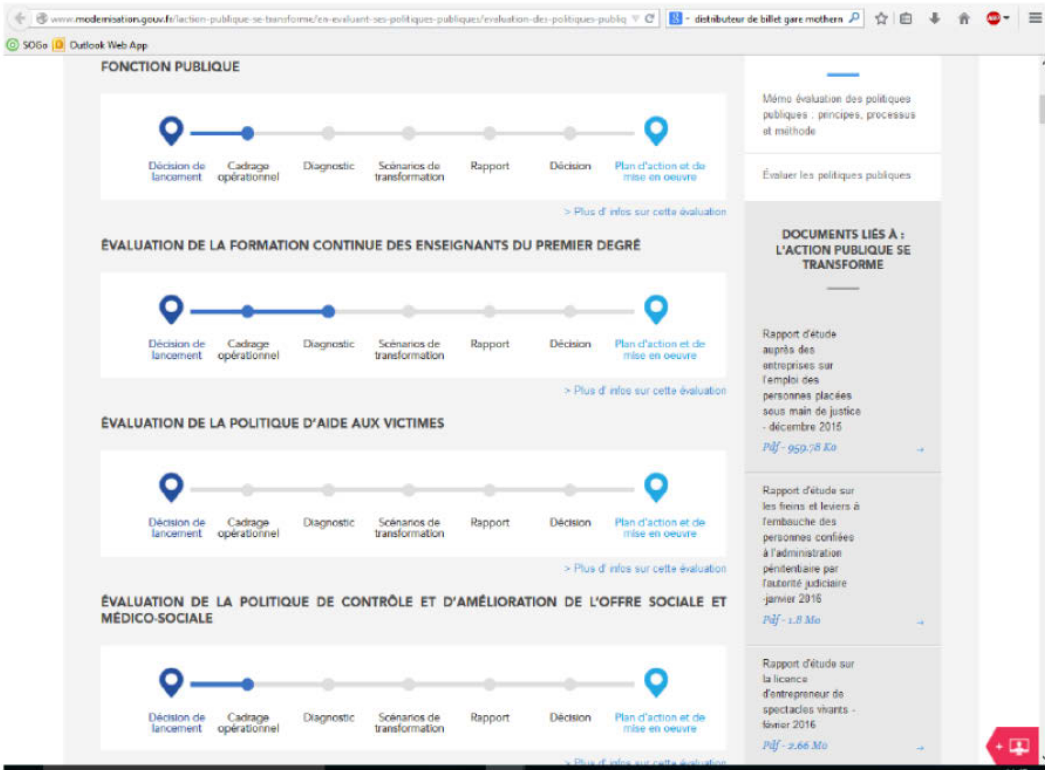
[36] Cf. A. Bozio and L. Romanello (2017) : Les notes de l'IPP, n°25, Mars 2017.

[37] Cf. Qu'apprend-on des expérimentations sociales? Formation Emploi n°126, juillet 2014

[38] See notably in this respect : http://dares.travail-emploi.gouv.fr/IMG/pdf/rapport_garantie_jeunes.pdf November 2016, or Les jeunes en emploi d'avenir : quel accès à la formation, pour quels bénéficiaires ? http://dares.travail-emploi.gouv.fr/IMG/pdf/2016-056-3.pdf .

[39] http://www.modernisation.gouv.fr/laction-publique-se-transforme/en-evaluant-ses-politiques-publiques/toutes-les-evaluations-de-politiques-publiques

Figure 12: Screenshot of the portal devoted to evaluations



The different documents produced during the evaluation process (interim and final reports) are available. The different documents produced during the evaluation process (interim and final reports) are available. No indication is given about terms of reference or competition in intellectual services contracts or evaluation budgets.

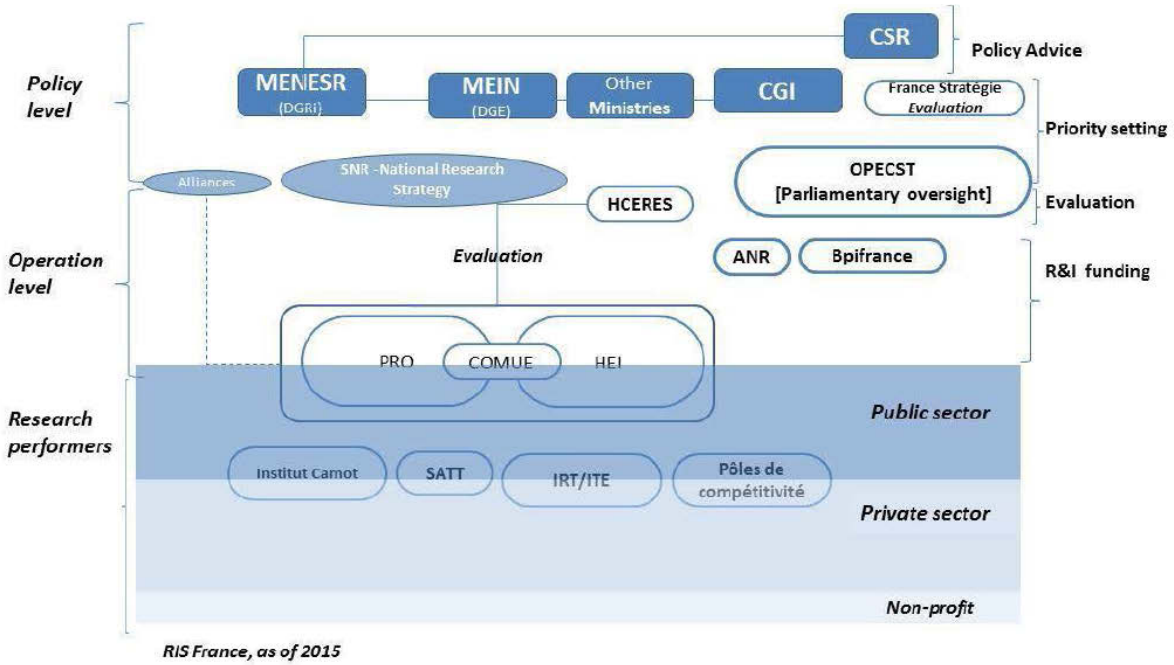
4.1.3 Actors and Institutions:

In the RTDI field, the creation of the ANR has been complemented by the setting up of the High Council of the Evaluation of Research and Higher Education (HCERES, previously AERES). Its main mission consists in evaluating research and higher education institutions, PROs, research units, higher education programmes and degrees to link the allocation of institutional funding to a performance assessment. (Rio country report –France 2015, p9)

In 2014, a specific mission of evaluation of innovation policies and of the innovation policy mix was assigned to the General Commission for Strategy and Economic Foresight by the Prime Minister[40], and a related committee was installed (Rio country report –France 2015, p13).

[40] 4 « La commission d'évaluation des politiques d'innovation créée au sein du Commissariat général à la stratégie et à la prospective », Press Release, Prime Minister, 4 november 2014.

Figure 13: Main actors and institutions related to evaluation in France



Acronymes used in the chart:
ANR: Agence nationale de la recherche / National Research Agency
Bpifrance: Public Investment Bank
CGI: Commissariat général à l'investissement / General Commission for Investments
CSR: Conseil stratégique de la recherche / Strategic Research Council
COMUE: Communauté d'universités et d'établissements / Higher Education and Research Institutions and University Clusters |
DGE: Direction générale des entreprises au MEIN / Directorate-General for Entreprises at Ministry of the Economy, Industry and Digital Sector
DGRI: Direction générale de la recherche et de l'innovation (au MENESR) / Directorate- General for Research and Innovation (within the MENESR)
HCERES: Haut Conseil de l'évaluation de la recherche et de l'enseignement supérieur / High Council for Evaluation of Research and Higher Education
HEI: Higher Education Institution
Instituts Carnot: Research network of 34 institutes dedicated to fostering enterprise innovation through public-private collaboration
IRT: Institut de recherche technologique / Technology Research Institute (Investments for the Future Programme)
ITE: Institut pour la transition énergétique / Energy Transition Institute (Investments for the Future Programme)
MEIN: Ministère de l'Economie, de l'Industrie et du Numérique / Ministry for the Economy, Industry and Digital Affairs
MENESR: Ministère de l'Education nationale, de l'Enseignement supérieur et de la Recherche / Ministry of Education, Higher Education and Research
OPECST: Office parlementaire d'évaluation des choix scientifiques et technologiques / Parliamentary Office for the Evaluation of Scientific and Technological Choices
Pôles de compétitivité: Competiveness clusters
PRO: Public Research Organisation / Organisme public de recherche
SATT: Société d'accélération du transfert de technologies / Private companie (full public capital) dedicated to boosting technology transfer from universities through intellectual property
SNR: Stratégie nationale de recherche / National Research Strategy
NB : The 'bottom layer' encompasses Instituts Carnot, SATT, IRT and 'Pôles de compétitivité' ; it forms the policy base from which closer connections between academic research and industries are to be developped.

The layer was built up in three stages ; the 71 Clusters – inspired by Porter's apporach- were launched in 2005, the 34 Instituts Carnot, in 2006, and the 14 SATTs and 8 IRTs in 2010. (Rio country report –France 2015, p18f)

According to the Rio country report –France 2015 (p. 21) : "The Strategic Research Council is responsible for proposing the broad national strategy for research and [...] involved in the evaluation of their implementation. [It] is chaired by the Prime Minister or by delegation by the Minister for Research." The Strategic Research Council was established on 19 December 2013, replacing the High Council for Science and Technology (HCST), founded in 2006. The Council includes 264 members, strictly respecting gender equality. The Strategic Research Council meets at least once a year at the initiative of its President, who determines the meeting agenda. Meetings may also be held at the initiative of the Vice-President, including when dealing with a question from the Prime Minister or the Minister for Research.

The Parliamentary Office for Evaluation of Scientific and Technological Choices (OPECST) is to provide a biennial evaluation of the implementation and effectiveness of the National Research Strategy (including public aid to private research). As such, it will regularly contribute to assessing the implementation of the National Strategy (Law of 22 July 2013). The National Research Strategy is to include multi-annual programming (4 years).

4.1.4 What kind of evaluations are commissioned and conducted?

Various types of evaluations are to be carried out within a national research and innovation system. Beyond evaluation of individual researcher, evaluation may examine research units or a whole PRO, research programmes, schemes or policies. The first two types have impacts (on the researchers' careers and on the research units means), while impacts of the latter have long been described as complex and without visible impacts. The following paragraphs illustrate these, through recent reformation waves that have clarified and improved the system.

The National Commission for the Evaluation of Innovation Policies (set up in June 2014), sitting with France Strategy, is responsible for evaluating innovation policies (including the impact of R&D tax credit). The national Court of Auditors publishes regular reports covering most of the research and innovation policies, which will prove complementary to those of the National Commission for the Evaluation of Innovation Policies. A member of the Court participates in the Commission. (Rio country report –France 2015, p. 16)

The March 2015 National Research Strategy report sketches an "analysis matrix proposal", aiming at defining a preliminary set of evaluation indicators (cf. pp.213-215). Those indicators were meant to be used both for selecting the strategic priorities and for assessing the strategy's impacts in terms of science, economy and society. In addition to the 'impact criteria' - such as e.g. the basic science advances per domain as a consequence of the programme -, there are 'maturity criteria: consistency of the programme with other existing schemes, from other policy sectors; existence of a scientific critical mass; readiness of the programme (short/ medium/ long term).

In the purpose of modernizing the national framework for higher education and research, an evaluation was carried out between November 2012 and april 2013 by a commission chaired by Jean-Luc Beylat (CEO of Alcatel Lucent Bell Labs France) and Pierre Tambourin (CEO of the Genopole). The assessment aimed to identify options for optimising the French technology transfer and innovation system, which was reported to "look like an incoherent *millefeuille*". On the beginning of April 2013, the report was submitted to three ministers, the Minister for Higher Education and Research, the

Minister for Economic Regeneration and the Minister with responsibility for SMEs, Innovation and the Digital Economy. Entitled "Innovation, un enjeu majeur pour la France (*a major challenge for France*)", it proposes an original reflection on the multiplicity of levers of innovation (including taxation, culture of innovation, support structures, etc.). Although the applicability of the recommendations has been disputed16, it nonetheless provides solid evidence of the relevance of a systemic approach on national innovation policy implementation issues.

On 27 June 2014, the OECD delivered the "OECD Review of Innovation Policy: France", commissioned by the High Commission for Investments. A complete account of this report is beyond the ambition of this paragraph; it recommends finalising the structural changes partially implemented to promote excellence in research and higher education, to improve research evaluation and to foster synergies between industry and the public sector. It also recommends that universities should be strengthened. On the whole, the OECD review provides a set of about 20 recommendations, grouped according to six major components of the French R&I system (plus a focus the Investment for the Future programme*, per se* a set of implemented recommendations).

Two of these recommendations are:
Public research: furthering both "site policy" and project funding of public research, based upon systematic and periodic evaluations (including of researchers);
Governance: the Strategic Council for Research should be given a genuine functional independence vis-à-vis the research institutions (notably the PROs); independence should also be further developed for evaluations, in particular as far as the High Council for Evaluation of Research and Higher Education (HCERES) is concerned; evaluation should be made more effective in directly influencing the evaluated entities. (Rio country report –France 2015, p. 24)

Although the question of the impacts of regulations and laws on innovation was debated, both in 2012 and in 2014104, within the Parliamentary Office for the Evaluation of Scientific and Technological Choices (OPECST), there is no such thing as a systematic impact assessment of new laws on innovation and competitiveness as is the case at EU level. There are some ex ante evaluations of future regulations and laws mainly when they pose ethical problems. (Rio country report –France 2015, p. 91).

More generally, the interviews carried with several French experts in the field of evaluation[41] as well as the national workshop (held in Strasbourg, 24/03/2017) highlighted that:

- Rather than a question of tools, progresses in France related to evaluation is a question of attitude. A predominance of legal aspects is still to be observed whereas management issues appear as second-ranked, which hampers the impacts of evaluation exercises. The situation is nevertheless improving over time according to the interviewees.
- There is historically in France a strong preference for ex-ante evaluations can be observed. The development of ex-post evaluations came later. In-itinere or on-going evaluation practices progressively emerge, mainly at the regional or local level. So far, experimental forms of evaluation appear as very marginal.
- The French evaluation culture is strongly oriented towards top-down approaches. Too little attention paid so far to participative evaluation and co-construction of indicators .

[41] Four interviews: two on the 14/03/2017, one on the 15/03/2017 and the lastone on the 17/03/2017.

- There seems to be a clear willingness of policy makers (in particular at regional level) to "learn" from evaluation practitioners (e.g. private consultants) and asking for detailed methodologies to be put in the appendixes of evaluation reports (this was not common some ten years ago).
- International norms, in particular European ones (linked for instance to European Funds such as EFRE) progressively modify the types of evaluations that are commissioned in France. Nevertheless, the concept of public value chains (inputs-outputs-outcomes- general or societal impact) is still in childhood so that impact analyses are too rare.

4.1.5 Relevance of gender equality in RTDI evaluations & evaluation of gender equality initiatives in RTDI

The French situation in terms of evaluation of gender equality initiatives in RTDI needs to be put in perspective. In general, very little attention is paid to the evaluation of gender equality initiatives at all. Most often (cf. interview dated 09/03/2017), certain forms of evaluation of actions related to gender equality take place but mainly under the form of financial controlling. This financial control is mandatory, for instance in the case of European funding (e.g. ESF), and tend to measure rather the expenses linked to the activity than the impacts generated. From a general point of view such "evaluations" are rarely motivating and can even be the source of some forms of organisational stress. In addition, the tools and indicators employed were defined without any involvement of the beneficiaries and seemed sometime not particularly adapted to the considered issue.

Similar thoughts emerged at the very beginning of gender equality initiatives launched by pioneering French universities (such as the University of Strasbourg): almost no financial resources were devoted to those initiatives and the very idea of evaluating the impacts was considered as totally counterproductive (cf. interview with an expert of the place of women in French universities dated 16/03/2017).

According to a civil officer of the Research Ministry in charge of gender equality issues (interview 17/03/2017) no evaluation exercise– in a narrow meaning – of specific policies in the field concerned has been performed so far by the Ministry.

According to this interviewee, what seems to be the closest to such exercises are normative and /or selective approaches. For instance, the Research Ministry is currently thinking about introducing in some sources of funding for universities and research organisation the condition of being labelled as "gender equality respectful" for gaining funds but no clear mechanism has been adopted so far. Moreover, the Ministry is paying attention to normative policies that may contribute to the introduction of gender dimension thanks recent developments, such as the AFNOR norm "*Egalité-Diversité*" for instance.[42] The Ministry of Work and Social Affairs has adopted this norm and the Research Ministry is planning it in the future.

In addition, the most recent roadmap of the ministry in charge of higher education and research – provides some analyses on the progresses of public policies supporting gender equity in the (public) RTDI sector (see MENESR, 2017, pp. 31-35). Nevertheless, one may not speak from a real evaluation

[42] http://www.boutique-certification.afnor.org/certification/alliance-label-diversite-egalite-afnor-certification

of the impact of the concerned policies, rather of a first step in this direction taking the form of a detailed presentation of what was achieved.

More generally, when it comes to major investments benefiting the academic sector (such as the excellence initiatives called IDEX) or public and private actors of the innovation system (e.g. national cluster policy), none of the experts consulted (including the author of the present report) could remember that the gender dimension was considered when evaluating the impacts of such public investments in the RTDI system.

4.1.6 Recent trends/developments in RTDI policy evaluation

While no evaluation of the complete portfolio of policy instruments in support of research and innovation has been provided as requested repeatedly in the Council recommendations (2015, 2014), the recent creation of the National Commission for the Evaluation of Innovation Policies represents an important step for the identification of systemic weaknesses and necessary improvements. In addition, a set of measures and policy orientations have been defined to promote a more efficient financing and foster a favourable innovation ecosystem. (Rio country report –France 2015, p. 7).

Some efforts are being made both to simplify and to improve the efficiency of most RDI support measures. While a substantial number of policy initiatives have recently been taken in this aim, the overall system is however still excessively complex. Systematic and periodical evaluation exercises are needed to precisely identify the weaknesses and necessary improvements of R&I policy. The new National Commission for the Evaluation of Innovation Policies should be particularly helpful in this regard. (Rio country report –France 2015, p. 8).

The governance of the French research and innovation system has been evolving over the last ten years with the objective of clarifying the system's functions to improve its performance. This clarification implies three levels of action, namely: i) policy-making, ii) implementation (funding and programming) and iii) execution (enforcement of regulation). Thanks to simplified missions of execution mechanisms at each level, evaluation may also be facilitated. In 2014, a specific mission of evaluation of innovation policies and of the innovation policy mix was assigned to the General Commission for Strategy and Economic Foresight by the Prime Minister, and a related committee was installed. (Rio country report –France 2015, p. 13).

Finally, although evaluations of the R&D institutions, programmes and policies have long been identified as a weak point of the French framework, recent developments indicate a significant evolution in this field. A National Commission for the evaluation of innovation policies has been created in 2014 and should allow future independent assessments of R&D stakeholders. According to the Rio country report –France 2015 (p. 91), systemic evaluations remain much too scarce though and too often confined to generic questions relating to 'big principles'. Government and policy bodies - even when they were build independent - tend to be cautious when it comes to being evaluated.

4.2 Evaluation utilisation and policy learning:

According to one French evaluation expert (interview dated 17/03/2017) one of the handicaps of French evaluation practices is to be framed by a culture oriented towards administrative and political matters rather than towards management issues. This hampers policy learning and more generally impacts negatively the spread of new approaches. In addition, the historical tendency to invest rather into ex-ante rather than into ex-post or in-itinere evaluations may have a positive effect when

it comes to the launch of large projects requiring a high level of investments but limits quite strongly policy learning effects.

The reluctance concerning new forms of evaluations (such as embedded experimental evaluations or evaluations based on random sampling processes) can be seen in this respect as an obstacle that should be overcome in the future in order to foster policy learning.

Interestingly, one of the interviewees specialised in French public policies (dated 14/03/2017) considers that – based on his own experience – subnational authorities (e.g. regions or large agglomerations) are "learning" much more from evaluations than national institutions (e.g. ministries). Different hypotheses can be formulated in this respect. The first one has to do with the scarcity of (mainly financial) resources at local level which reinforces the need to monitor with precaution initiatives and investments. The second hypothesis has to do with political pressure. Local elected politicians are keener to learn from evaluations since they are "closer" to the voters (in the meaning that they may not be re-elected without clear proofs of their achievements). Finally, the influence of European supporting regional and social funds imposing mandatory evaluations is clearly to be felt, due to the necessity of providing significant results in order to benefit from future financial support.

All in all, improvements were realised over the two past decades but the French RTDI system may still benefit greatly from further advances when it comes to policy learning resulting from evaluation exercises. According to an economist (interview dated 14/03/2017), a core element determining policy learning guided by evaluations is the rate to which the philosophy of "evidence based policy" will progress in France. This seems to be true for the whole RTDI system and even more when it come to the specific issue of gender equality in the RTDI system.

5 Conclusions

5.1 Comparison between gender equality in the labour market and in RTDI

When asking in how far the RTDI sector is very different from the whole labour market concerning gender equality in the case of France, following can be stated:

- From a macroeconomic perspective, there seems to be a strong similarity between the whole economy and the RTDI sector. A clear indicator is the absence of difference in the gender pay gap which is the same for the whole economy and the RTDI sector.
- One of the main vectors of gender inequality is most probably the overrepresentation of women in part-time jobs, with the same consequences within the RTDI sector as within other sectors.
- Interestingly, the RTDI sector seems to be particularly reactive to certain form of policies or initiatives that are developed without any focus on the academic world but for all economic sectors (if not for the society as a whole). The issue of the fight against sexual harassment constitutes a good example.

5.2 Main strengths and weaknesses of the innovation system and their impact on gender equality in RTDI

The characteristics of the French innovation that may mainly impact gender equality in RTDI can be summarized along three dimensions:

- Due to the importance of the public sector (notably in terms of number of people employed) in the French innovation system, normative changes that are relatively easy to initiate (e.g. mandatory quotas) may generate a noticeable leverage effect.
- The strong imbalances in terms of disciplinary fields that can be observe constitute a crucial obstacle in terms of gender inequality in the French RTDI system (this relates also to the underrepresentation of men in certain disciplines).
- It is too early to assess precisely the potential impacts of the progressive emergence of gender issues in research and teaching.

5.3 Main issues of evaluation culture and policy in RTDI

Some issues concerning the French evaluation culture and policy in RTDI can be stressed:

- The evaluation culture still suffers from approaches that are not sufficiently oriented towards policy learning and/or participatory processes.
- There is so far a total absence of evaluation of gender-related policies in RTDI.
- Experts express clearly a crucial need for systemic and long term evaluations concerning gender equality policies in RTDI.

6 References

ANEF (Association nationale des études féministes,2014) : Le genre dans l'enseignement supérieur et la recherche - Livre blanc, La Dispute, coll. « Le genre du monde », Paris.

Boyer D., Céroux B., « Les limites des politiques publiques de soutien à la paternité », Travail, genre et sociétés, 2/2010 (n° 24), p. 47-62.

Bozio, A., Romanello, L. (2017) : Les notes de l'IPP, n°25, Mars 2017.

Carbonnier C. (2008), "Analyse des conséquences incitatives et redistributives de la dépense fiscale pour l'emploi à domicile", Les cahiers de la DGTPE, 2008-05, décembre.

CESE (Conseil Economique Social et Environnemental, 2015) : Promouvoir une culture de l'évaluation des politiques publiques, Paris.

CNRS (Centre National de la Recherche Scientifique, 2015). Bilan social et parité. Paris

Crespy, C., Heraud, J. A., & Perry, B. (2007). Multi-level governance, regions and science in France: between competition and equality. Regional Studies, 41(8), 1069-1084.

Echevin D. (2003), "L'individualisation de l'impôt sur le revenu : équitable ou pas ?", Economie et Prévision, n° 160-161, pp. 149-165.

Fraunhofer ISI, GIGA, STIP (2008, p. 131): New Challenges for Germany in the Innovation Competition. Report Karlsuhe, Bonn and Atlanta. URL: http://www.isi.fraunhofer.de/isi-de/p/projekte/archiv/rf_tlf_asien.php

Héraud/Lachmann, 2015 « L'évolution du système de recherche et d'innovation : ce que révèle la problématique du financement dans le cas français » Innovations 46 9-32

Larédo P, Mustar P, 2001 "French Research and Innovation Policy: Two Decades of Transformation", in Research and Innovation Policies in the New Global Economy. An International Comparative Analysis P Larédo, P Mustar (Edward Elgar, Cheltenham, UK, Northampton MA, USA) pp 447-496

MESR (Ministère de l'Enseignement Supérieur et de la Recherche, 2013a) : Egalité entre les femmes et les hommes – Chiffre clés de la parité dans l'enseignement supérieur et la recherche, Paris.

MESR (Ministère de l'Enseignement Supérieur et de la Recherche, 2013b) : Egalité entre les femmes et les hommes – Orientations stratégiques pour les recherches sur le genre, Paris.

MFEEDF (Ministère des Familles de l'Enfance et des Droits des Femmes, 2016) : Vers l'égalité réelle entre les femmes été les hommes. Paris.

MESR (Ministère de l'Enseignement Supérieur et de la Recherche, 2016) : Vers l'égalité femmes-hommes – Chiffres clés. 2016. Paris.

MENESR (Ministère de l'Education Nationale, de l'Enseignement Supérieur et de la Recherche, 2017 : Feuille de route 2017 – Pour l'égalité réelle entre les femmes et les hommes. Paris.

Monnier, J.-M.: L'impôt sur le revenu, l'emploi des femmes et les inégalités de genre. In : Revue Interventions économiques [En ligne], 41 | 2010, mis en ligne le 01 mai 2010, consulté le 14 février 2017. URL : http://interventionseconomiques.revues.org/423 .

Muller E, Zenker A, Héraud J-A, 2009, "France: Innovation System and Innovation Policy", Fraunhofer ISI Discussion Papers Innovation Systems and Policy Analysis No. 18/2009, Fraunhofer ISI, Karlsruhe

Pfefferkorn, R. « Les politiques publiques et la question de l'égalité hommes-femmes. Le cas de la France », Cahiers du Genre 2002/1 (n° 32), p. 87-109.